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The Conservation of the Human Breast: A Contribution to the Prevention of Cancer.

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THE CONSERVATION OF THE HUMAN BREAST: A CONTRIBUTION TO THE PREVENTION OF CANCER.

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Enthusiasm wisely directed and rationally controlled is a potent factor in the success of any undertaking. In the campaign of education concerning cancer it is a grave question whether enthusiasm has become uniformly wisely directed or rationally controlled. It is well, therefore, to take an accounting of stock occasionally in order to see just wherein we may have erred. The purpose of this paper is in line with such an accounting, and is intended to emphasize some of the pitfalls which have been noted to date in one direction—the conservation of the human breast. It is safe to say that no organ or part of the body has figured more conspicuously in the literature of the crusade against cancer than has the breast.

I have cited elsewhere* the fact that 757 cases of new growths in the London hospitals from 1904 to 1909, treated as cancer, proved, upon microscopic examination, not to be suffering from that disease. Of these 757 (out of a total of 9,488 entered as cancer) 438 were accessible tumors, tumors on the surface of the body, or in parts accessible to external examination. From such figures it is fair to assume that similar mistakes in diagnosis are not uncommon in the case of the breast.

* Bainbridge: "The Cancer Problem," 1914, pp. 195-196 (quoted from Bashford, in the *Lancet,* London, Sept. 4, 1909, II, p. 691).

I have no figures available to show the proportion of malignant tumors of the breast treated in the beginning as benign growths, but those who observe large numbers of patients afflicted with cancer know the distressing frequency with which they are called upon to operate in cases of advanced cancer with a history of the neoplasm having been pronounced "harmless" by one or more physicians at the time when it was easily removable, and hence curable.

It is, however, to the first category that I wish to call particular attention, in order to emphasize a timely warning against the hyperenthusiasm which has been manifested by some who have participated in the campaign of education against cancer. One expression of this hyperenthusiasm repeatedly uttered by prominent surgeons, before mixed audiences of laymen and physicians, is to the effect that "within twenty-four hours after a lump is discovered in a woman's breast, that breast should be removed." Many versions of this statement have been made by "cancer campaign" enthusiasts, which have tended to reduce it to the category of a "slogan" or war cry. If followed indiscriminately, many a woman would go through the remainder of life unnecessarily mutilated, and not a few hampered by the direful mental hazard which such a mutilation is almost sure to create. Such a woman at once becomes, in her own mind, foredoomed to recurrence and to ultimate death from cancer, whether the tumor removed was or was not cancer. For we must not forget that while we are educating

laymen with reference to the prevention of cancer, we are at the same time enlightening them concerning the dangers of the disease, its frequency, its clinical course, its signs and symptoms, perhaps, and many other matters whose dissemination is of decidedly questionable wisdom at this stage of our own knowledge—or lack of knowledge—relative to this malady of misconceptiton. The woman, so enlightened, is duly impressed with the horrors of the disease, and when she finds herself marked for life by the absence of a breast, removed for "cancer," she must be indeed a very level-headed and well-poised woman who does not invest at times with reality in her own person the horrors of which she has read or heard, or which, perhaps, she has seen pictured on the screen or elsewhere.

It behooves us, therefore, to bear in mind: (1) that causes, other than malignancy, may give rise to tumors in the breast; (2) that some of the so-called characteristic and classic signs of cancer, such as retraction of the nipple, elevation of the breast, and pain, may exist entirely independent of malignant involvement; (3) that by more careful diagnosis unnecessary mutilation may often be obviated; (4) that certain special surgical principles should be employed in operating upon the breast if the prevention of cancer is to be fostered.

The following cases, which might be multiplied many times, are illustrations of these contentions.

Local manifestations of other diseases are always to be thought of in connection with tumors of the breast, notably tuberculosis, syphilis, Hodg-

kin's disease (pseudoleukemia), and chronic intestinal stasis. It has long been known that the breast may be the seat of tumor formation in certain "systemic" diseases, as well as in "specific" affections, and yet it is by no means unusual for practitioners to refer patients to surgeons for removal of the breast in cases which are amenable to treatment by other means, and in which such surgical intervention would entail unnecessary mutilation.

Case I. *Syphilis.* P., married, 38 years of age when referred to me, November 21, 1910. The patient gave a history of having been always well and strong until two years before, when she began to have pain, more or less continuous, to the right of the sternum, at the upper part of the right breast. Examination showed enlargement of the sternal ends of the second, third and fourth ribs on the same side. This was verified by x-ray examination, according to which the pleura and lung were not involved, and the bone changes were not sufficiently characteristic to justify stating whether this was sarcoma or some benign growth. Wassermann and Noguchi tests both proving positive, the patient was placed on mixed treatment of potassium iodid and proto-iodid of mercury, with the understanding that if improvement was not satisfactory salvarsan would be employed. This treatment was continued, under the supervision of her physician, for a year. There was improvement in the pain, and the growth in the chest wall decreased slightly, for a time, then remained stationary. Salvarsan was then administered, intravenously, and

followed by the mixed treatment. On May 1, 1915, her physician reported that, under the mixed treatment continued for the requisite time, the growth had entirely disappeared, the pain had ceased, and she had been well ever since.

In this case, with a growth apparently in the upper quadrant of the breast and involving the ribs, the diagnosis of malignancy was certainly to be considered, but operative interference, as suggested by one physician consulted, would have been worse than useless.



Fig. 1. Case 2.

The following case is an illustration of the possibility of mistaking circumscribed manifestations of Hodgkin's disease for cancer.

Case II. *Hodgkin's Disease.* N., married, 32 years of age. Admitted to the New York Skin and Cancer Hospital, April 3, 1915, with the following history: About two years ago she first noticed an enlargement of the thyroid gland, and about a year

ago a tumor appeared on the right side of the neck, and another at the upper and outer margin of the right breast, extending into the axilla. Six months before admission to the hospital a piece was taken from the tumor in the neck, at a hospital in a neighboring city. The report was lympho-sarcoma. Operation was not advised by the physician in charge, the condition being considered too far advanced for surgical intervention. The patient, growing steadily worse, entered the New York Skin and Cancer Hospital on her own initiative, to see if something could not be done for her. The condition at that time was as shown in Fig. 1. On April 5, 1915, some of the tumors were excised, and radium applied. The pathological report, by Dr. D. Stuart Dodge Jessup, was Hodgkin's disease.

Within the last few years a new significance has been given to certain "lumpy" conditions of the breast which were formerly neglected entirely, removed by surgical intervention, or treated with suspended judgment pending further developments. Latterly, Sir W. Arbuthnot Lane, of London, has cleared up the subject by demonstrating in a number of cases that the lumpy condition disappears after the patient is relieved, by surgical or non-surgical treatment, of the chronic intestinal stasis of which the breast condition forms a phase. The following case illustrates this class of breast tumors, which may be easily confounded with cancer, particularly in view of the emaciation, sallow skin which may resemble cachexia, and general debility,

so often the concomitants of both stasis and cancer.

Case III. *Chronic Intestinal Stasis.* H., single, 41 years of age. Referred by Dr. C. N. Skinner, Port Jervis, N. Y., May 27, 1914, for diagnosis. According to the history, this patient, a year before, had begun to have pain in the right breast, sometimes sharp and stinging, and worse at night. She complained of a sensation of the right breast being "drawn up." For a number of years she had, at times, pain in the right side, in the neighborhood of the appendix; also pain in the stomach, coming on very suddenly, and accompanied with such abdominal distension as to necessitate removal of the clothing. Otherwise she felt well. Examination showed both breast to be dependent and "lumpy," the right being considerably larger than the left. The diagnosis was made of chronic appendicitis, chronic intestinal stasis, and "stasis lumps" in the breasts. A support for the breasts, the removal of the appendix, and the correction of any other abdominal conditions that might be found at laparotomy, were advised. The patient had been treated by different physicians, with various applications to the breasts and different forms of supports. Several surgeons had advised amputation of the right breast. Laparotomy, performed by Dr. Skinner, upon my advice, June 17, 1914, with the following findings: A small ovarian cyst, right side; appendix adherent to ileum; ileo-pelvic (Lane's) band, causing ileal kink; parieto-colic membrane ("Jackson's veil"); bands between ileum and cecum. Appendix removed, bands cut trans-

versely and sutured longitudinally, cystic ovary removed. The patient made an uneventful recovery, and has since steadily improved in health. On March 11, 1915, Dr. Skinner reported that the "lumpy" condition in the breasts had disappeared, the right mammary gland having decreased to almost the size of the left.

This is one of a considerable number of cases in which I have observed complete disappearance of apparent tumors in the breast following treatment for chronic intestinal stasis. In all cases of this lumpy condition in the upper and outer quadrant of either breast—more often the left—chronic intestinal stasis must be ruled out by weight of evidence before a diagnosis of cancer is made and removal of the lumps or of the breast advised.

Local conditions (non-malignant), which, not properly cared for, may become malignant. There are so many unsolved problems connected with cancer, and so many theories proposed concerning its cause, that one would hesitate about repeatedly directing attention to any given presumptive factor in the initiation of this disease, were it not for the gravity of the situation and for the desire to emphasize the importance of being always on the side of safety. From this point of view, therefore, too much stress cannot be placed upon the care of the breast, especially, perhaps, the nipple, when it is the seat of any affection which is apt to leave cicatricial tissue. The breast, by virtue of its position and function, is particularly subject to trauma and chronic irritation. If we accept as true the find-

ings of modern research institutions, as well as of clinicians, with reference to the frequent correlation between cancer and irritation within the tissues or from without, we should make an especial point, in practice and in precept, of safeguarding the breast as a whole and the nipple in particular. The nipple is strategically placed. Infection in any part of the breast itself will not necessarily affect the entire organ, but if it involves the nipple it is very apt to do so. It is a grave question whether a young woman of the child-bearing age, whose nipple is destroyed, whose gland ducts are entirely blocked at their outlet, is not in the same category with the woman approaching the menopause with her breast largely scar tissue. It is a question whether it would not be better to remove the breast in either case, particularly in that of a child-bearing woman. Such a procedure may prove to be in line with conservative surgery as regards the preservation of life.

In this connection I wish to voice an earnest protest against the continued application of the term Paget's disease to conditions of the nipple. Paget's disease is described as "malignant papillary dermatitis, characterized first by an eczematoid process," affecting the nipple and areola. It would be more safely considered, it seems to me, as beginning cancer. We have at our command absolutely no means of determining the line of metamorphosis from the "eczematoid process" into the "malignant papillary dermatitis," and from that into the profoundly malignant carcinoma. A malignant proc-

ess starting in the nipple may become diffused throughout the breast by extending along the ducts in all directions and be far advanced before its true nature is discovered. The condition is either eczema or cancer, and to consider something between the two as an entity is unwise and most misleading. Every case of eczema of the nipple, therefore,

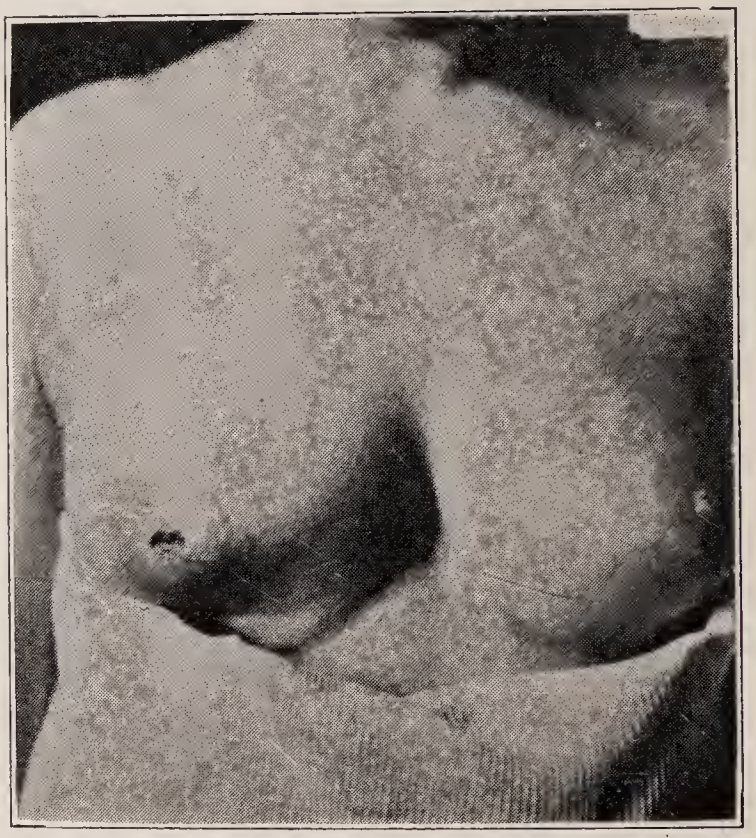


Fig. 2. Case 4.

should be under serious suspicion of malignancy. The following case illustrates certain points in this connection.

Case IV. *Eczema of the Nipple.* K., unmarried, 26 years of age. Condition when first seen by me, May 6, 1915, was as shown in Fig. 2. She had a lumpy and painful condition of the right breast, due to a pyogenic infection from the eczematous ulcer. Because of the ulcer at the nipple, the condition of

the breast, and enlargement of the axillary glands, she was sent by her physician to the hospital for removal of the breast for carcinoma. A few days of treatment caused complete disappearance of the eczema. If, however, in a case like this there is a certain amount of cicatricial contraction the gland ducts become obstructed, trouble may follow, necessitating in many cases removal of the breast. If the condition clears up under treatment within a reasonable time the diagnosis of eczema may be



Fig. 3. Case 5.

confidently made. If it persists, if there is induration and a good deal of scar tissue, the breast might as well be removed. Removal of the nipple alone, as a rule, is unwarranted. When a part of the breast is exsected, that entire part which is drained by the ducts in the vicinity should be excised.

In such a case, even if the eczema could be checked before malignancy has supervened, cicatricial contraction sufficient to block off all the gland

ducts in the nipple might occur. In a young woman of child-bearing age such a breast is at least potentially malignant, and the chances are strongly in favor of its becoming actually so. Even granting that the "eczematoid process" has not obliterated all the ducts, or that they are only partially blocked, child-bearing might be attended with such retention of milk as to lead to acute mastitis, abscess formation, or chronic mastitis—conditions strongly conducive to malignancy. In at least some such cases conservatism is on the side of the removal of the breast.

Another condition which may be mistaken for cancer, and which calls for seemingly radical but in reality conservative surgery, is chronic abscess. The following is a case in point.

Case V. *Chronic Abscess.* L., married, 26 years of age, Turkish by birth. Admitted to the New York Skin and Cancer Hospital April 3, 1914, the condition at this time being shown in Fig. 3. The abscess had been opened in Turkey, nine weeks previous to admission to the hospital. Examination showed a hard, discharging mass in the neighborhood of the nipple. The nipple was retracted, the breast was drawn up, and the glands in the axilla were enlarged. The breast was painful.

The abscess, in this case, involving the nipple, either had implicated, or was in fair way to do so, the entire breast. The extent to which the infection had already involved the breast could not be determined. This patient, of child-bearing age, with so much scar tissue around the

nipple as the abscess had already caused, and would cause, was in danger of cancer. The nipple was both retracted and contracted by the cicatricial tissue. The gland ducts were completely blocked, so that it would have been impossible for milk to escape in the event of another pregnancy. Conservation of life, therefore, demanded removal of the breast.

According to the old idea of treating abscess of the breast the important thing was to make a num-

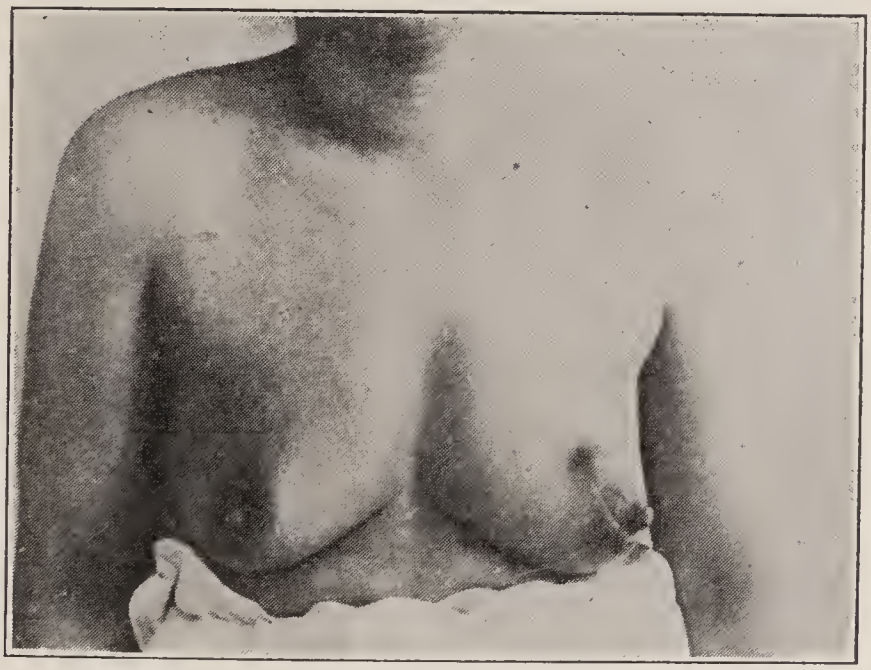


Fig. 4. Case 6.

ber of free openings about the organ, as well as in the abscess itself, and to apply ice. The multiple incisions of the breast involved the production of a great deal of scar tissue, and the result was a largely damaged breast, with blocked ducts, and scar tissue apt to be subjected to irritation—the best possible soil for the production of cancer. The tendency, at the present time, is to find the place in

the breast where the pus is nearest the surface and thoroughly drain through as small an incision as possible. Often the retained and thickened milk, looking so much like pus, is mistaken for it, and more damage done to the mammary gland than necessary. Conservative surgery with systematic massage and topical application of cold saves many a breast from extensive mutilation.

Case VI. *Acute Abscess.* M. R., 32 years of age, married, mother of nine children. Admitted

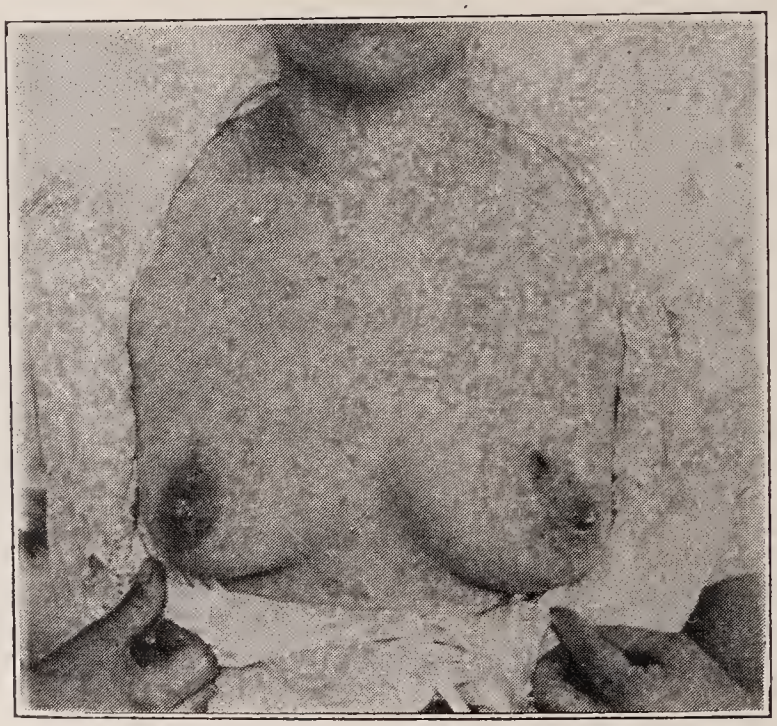


Fig. 5. Case 6.

to the New York Polyclinic Hospital, April 6, 1915, with the condition shown in Fig. 4. The abscess was incised and the cavity thoroughly cleansed. Fig. 5 shows the condition after operation, and Fig. 6 the condition one month later.

In such a case there is no reason to anticipate cancer as the outcome of this abscess, yet the old-

time method of treatment might easily have rendered the patient a probable subject of cancer. It is important in all such cases to place the incision so that the resulting scar will be as little subject to irritation as possible.

Case VII. *Furunculosis.* W., 18 years of age, colored. Admitted to the New York Polyclinic Hospital March 4, 1913, with the condition shown in Fig. 7. There were numerous small furuncles

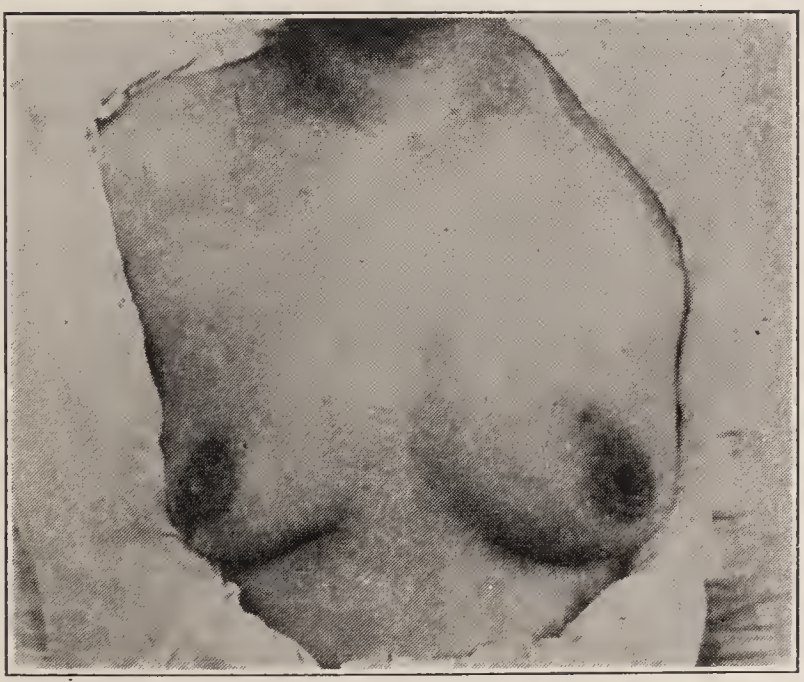


Fig. 6. Case 6.

around the nipple and areola. They were not deep infections, but had already produced some scar tissue, and would undoubtedly cause a good deal more to form if not carefully treated. This blocking off of the gland ducts would be the logical result, and in the event of child-bearing, abscess formation would be a virtual certainty. The condition, therefore, was one of potential malignancy. This condition had been diagnosed as cancer and amputation

of the breast advised. But by careful attention to the abscesses, opening and cleaning them out with antiseptics, it was possible to restore the breast to good condition. However, in view of possible blocking of the gland ducts, such a breast should be kept under observation.

Chronic Irritation. A part of the campaign of education with reference to cancer should be directed to the correction of certain errors in dress

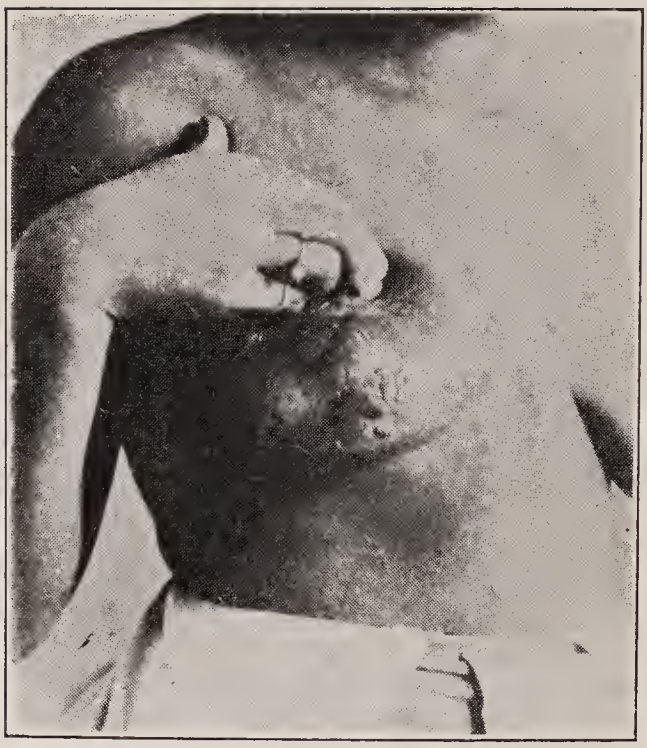


Fig. 7. Case 7.

which bring about conditions favorable to the development of cancer. One of the most common sources of evil in this connection is the corset. A large proportion of women wear corsets which are neither high nor low, but which come just high enough for the breast to impinge upon the top of the corset, especially when the wearer leans over. There is thus more or less constant irritation not

only of the skin but of the breast tissues. Sometimes, as in the following case, the initiation of the malignant process seems definitely traceable to this long-continued irritation.

Case VIII. *Irritation by Corset.* H., aged 53. Consulted me April 27, 1915. Fig. 8 shows the condition found under the right breast, caused by the constant friction of the corset steel. In the inner, lower quadrant of the breast was a small tumor. The nipple was retracted. The right breast was higher than the left. The ulcerated area shown in the picture was about as large as a silver quarter. The axillary glands of the right side were enlarged. Radical operation was indicated and performed.

Precancerous (Non-malignant) Tumors. The significance, diagnosis, and treatment of benign neoplasms of the breast suggest many points of interest in relation to the conservation of the breast and the preventiton of cancer. Many times nodules of this character, plainly not the outcome of chronic intestinal stasis, or of any of the conditions above mentioned, may be considered precursors of cancer. Sometimes it is feasible, when the nodules are small, and when only one or two are present, to remove these, saving the rest of the breast. In other cases, where multiple nodules are disseminated throughout the substance of the breast, the only conservative course is removal of the entire organ.

In such cases the contour of the breast should be preserved as nearly as is possible. This is particularly desirable in women accustomed to wearing evening gowns. This may be accomplished, in some

instances, by taking a pad of fat from the side, bringing it over, and suturing it under the skin over the breast. It is sometimes necessary, in doing this, to put in free drainage for a time, as there may be a little breaking down of fat. As a rule, however, there is no trouble, and the patient is spared the deformity consequent upon the removal

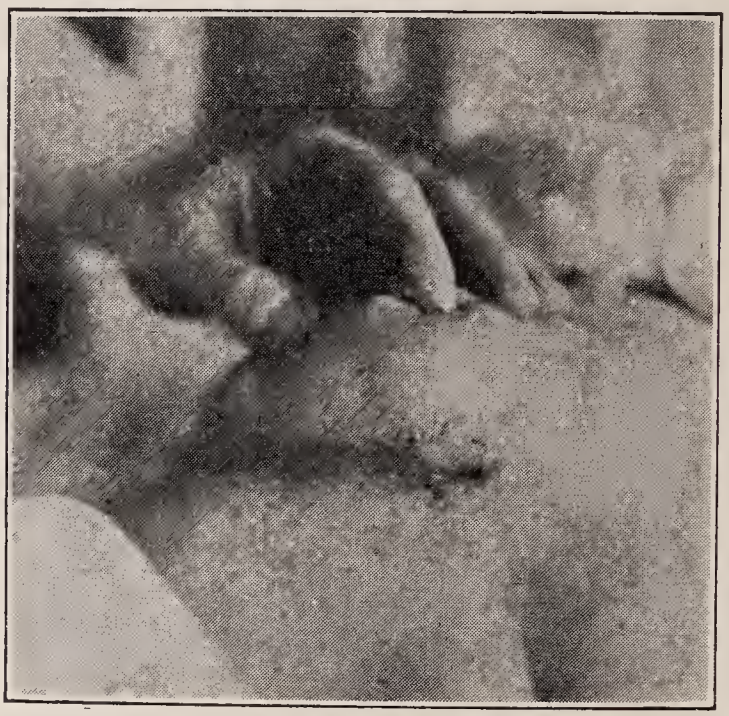


Fig. 8. Case 8.

of the breast. Illustrative cases follow:

Case IX. *Multiple Chronic Inflammatory Nodules.* A., 36 years of age, consulted me January 15, 1913. Both breasts presented a nodular condition which failed to respond to non-surgical treatment, and which was sufficiently extensive to warrant removal of the breasts. This was done, by conservative operation, as shown in Fig. 9. By this curved incision, along the lower and outer margins of the breasts, it was possible to leave intact the nipples and the skin, and, by lifting this up, to remove the

entire gland tissue, leaving all the fat in the upper part. By using this fat as a pad, the configuration

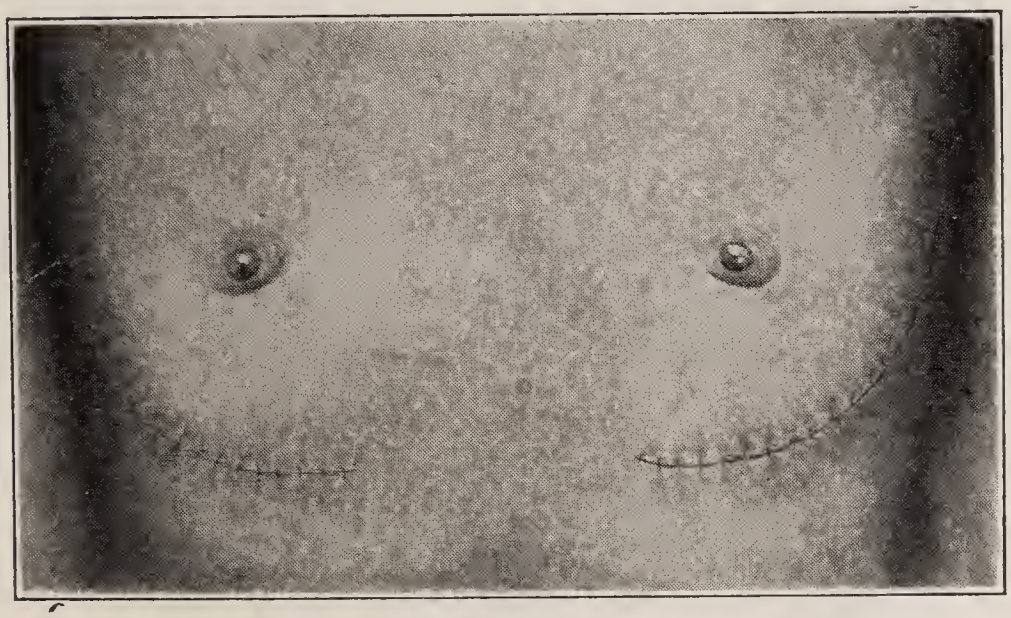


Fig. 9. Case 9.

was preserved. Pathological examination confirmed the diagnosis.

Case X. *Fibro-cyst-adenoma.* C. consulted me

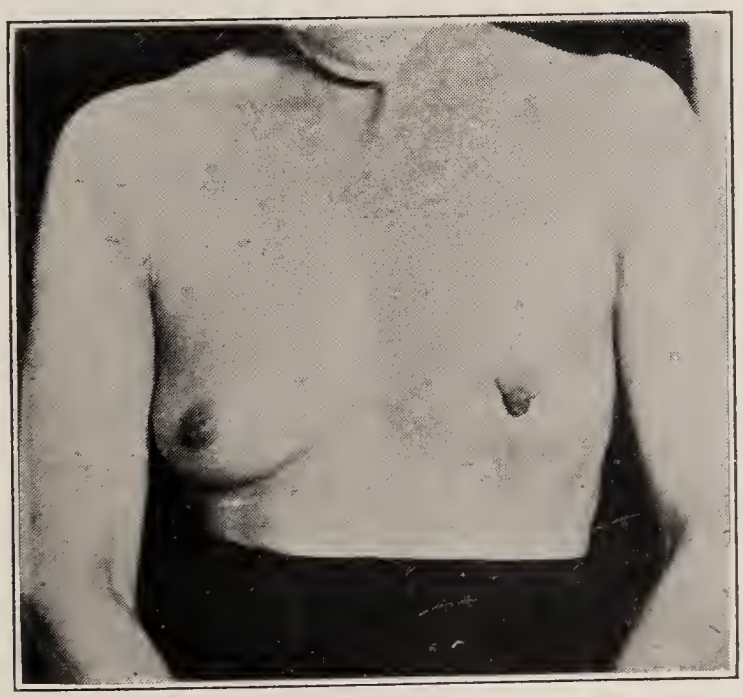


Fig. 10. Case 10.

in January, 1914, on account of multiple tumors in the left breast. Operation at the Alston Private

Hospital, January 28, 1914. By a semi-circular incision under the breast, as shown in Fig. 10, the nipple and skin, left intact, were turned up and the breast dissected out. Examination by frozen section, made by Dr. D. S. D. Jessup, proved the nodules to be fibro-cyst-adenoma.

When a tumor of such size and appearance as to warrant saving the breast is situated in the upper part of the gland, it may be removed, if not too

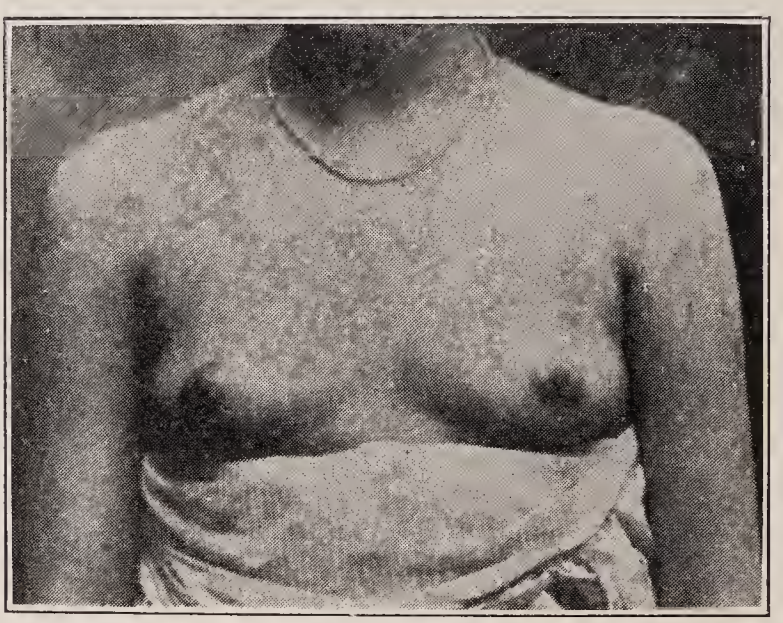


Fig. 11. Case 11.

deep, through an incision around the areolar margin, and continued, if need be, for a short distance radially in whatever direction the location of the tumors renders necessary. This is illustrated in Case XI.

In dissecting out a tumor it is always to be borne in mind that the entire section drained by the ducts supplying the part in which the tumor is situated is to be removed. If the milk ducts are cut across,

and the remaining occluded portions are left *in situ,* trouble will be very apt to follow.

Case XI. *Adeno-fibroma.* C., single, 19 years of age. Admitted to the New York Polyclinic Hospital March 22, 1915, for removal of tumor of one year's duration in right breast. There was no visible tumor, as will be seen from Fig. 11. The nipples were on a line, and neither was retracted. When the breast was held, as shown in Fig. 12, a tumor became apparent. This proved to be about



Fig. 12. Case 11.

the size of the half of a hen's egg. It was just beneath the skin, freely movable. No enlargement of glands. Through an incision circumferential to the nipple, as shown in Fig. 13, the tumor was removed, leaving the glands and ducts in continuity. The tumor, actual size, is shown in Fig. 14.

With careful coaptation of the skin wound no external scar is left in such a case, and if the glands and their ducts are left intact, no scarring in the

breast substance is left to cause future trouble. It is important in such cases to have absolute

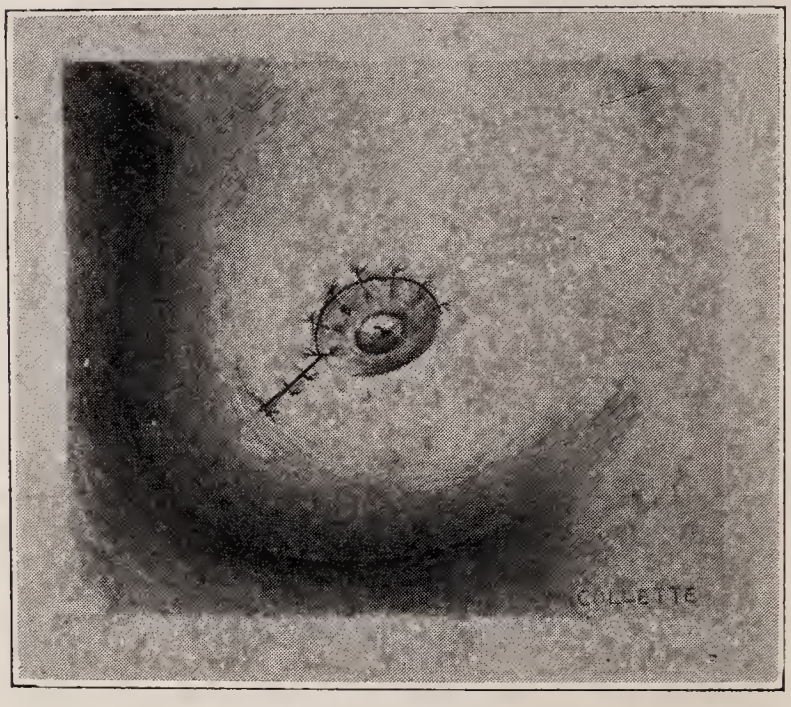


Fig. 13. Case 11.

hemostasis, in order to prevent the possibility of a hematoma. In a young woman it



Fig. 14. Case 11.

is important to save the glands and ducts if possible. No deep stitches, except in the capsule, should be taken in such a case, as, in drawing the tissue together, there may be a blocking of some of these ducts.

Case XII. *Lipoma.* S., married, 35 years of age. Referred by Dr. T. T. Gaunt, October 21, 1914. About ten months before this the patient fell, catching her right arm on the top of a chair.

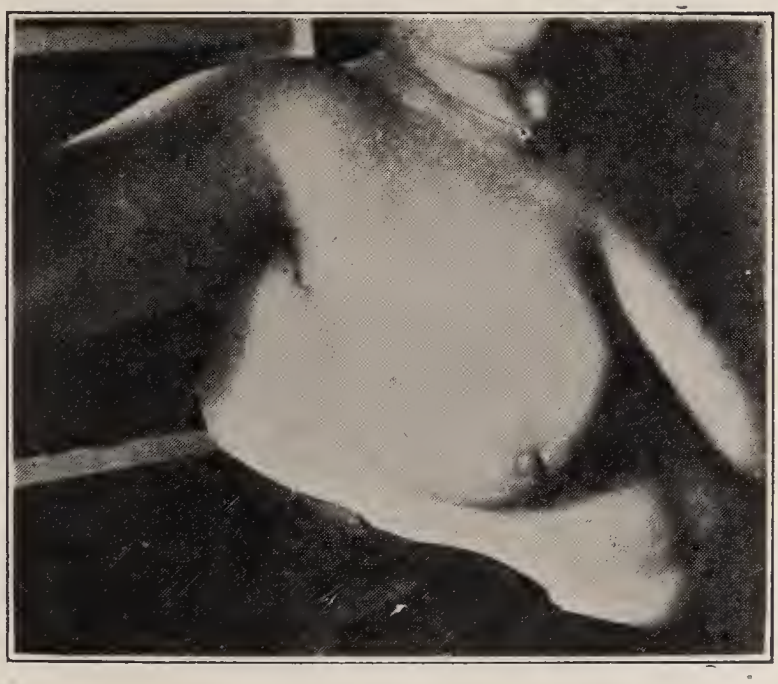


Fig. 15. Case 12.

She became "black and blue" where she was struck, and about eight weeks later a lump appeared in the right breast, at the outer margin. It grew slowly. There was no pain, but sometimes a severe aching in the breast, extending down the right arm to the fingers. The breasts were large and dependent, nipples normal, gland normal except for the tumor. The tumor was multilobular, and about the size of a mandarin orange. The patient had "heard so

much about cancer" that she was firmly convinced that the lump was cancer, and she urged having the breast removed. By a semi-circular incision around the outer margin the tumor was removed, preserving the breast. Pathological examination verified the clinical diagnosis of lipoma. Fig. 15, taken April 5, 1915, shows the result of the operation without mutilation.

Case XIII. *Lipoma.* B., 30 years of age. Operated upon at the New York Polyclinic Hospital

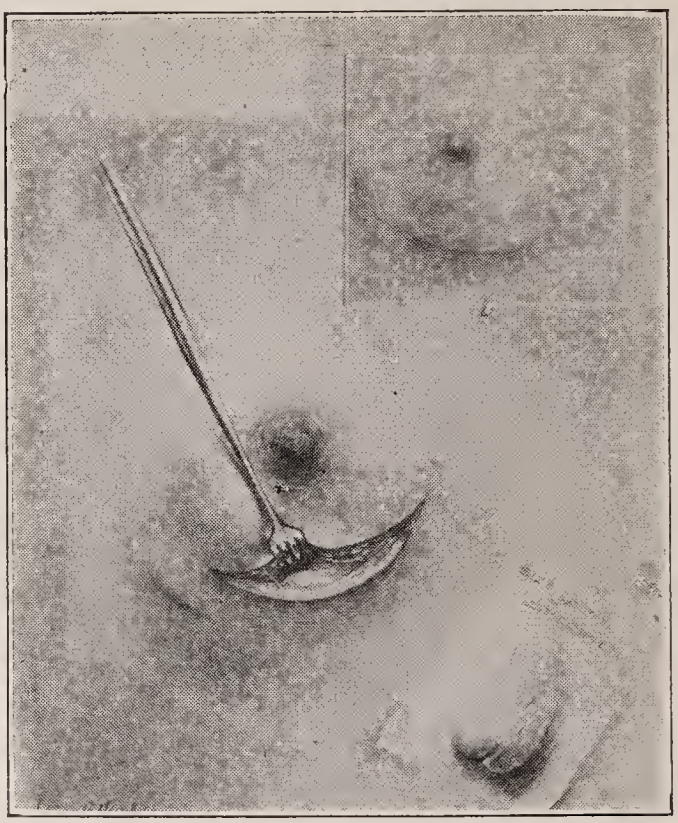


Fig. 16. Case 13.

May, 1909, for removal of a tumor which had been pronounced malignant by a number who advised radical surgery. Through an incision (Fig. 16-A) under the breast the tumor (Fig. 16-B) was removed, the gland tissue and ducts being left intact. The result is shown in Fig. 16-C.

Among the signs which it is customary to accept

as corroborative evidence of cancer of the breast are retraction of the nipple and elevation of the

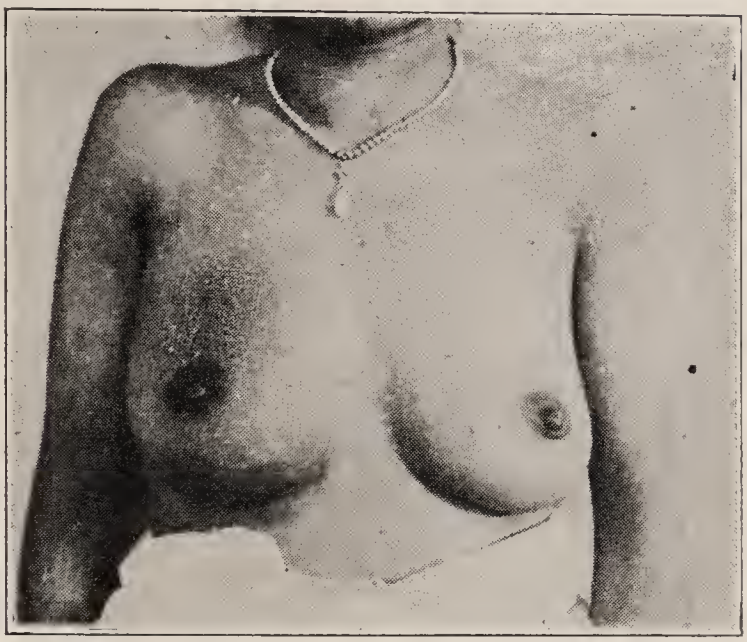


Fig. 17. Case 14.

breast so that the nipple is on a line higher than that of the opposite side. While it is important to



Fig. 18. Case 14.

bear this in mind, it is also wise to remember that both may be congenital, and in no way associated

with tumor formation, malignant or otherwise. Mere retraction of the nipple, in the presence of a tumor, is not sufficient evidence for the diagnosis of cancer. It may be congenital, or it may be the result of disease other than malignancy. The position of the nipple, likewise, higher or lower than its fellow, may be congenital. Pain, too, which is considered among the signs of cancer, is not always

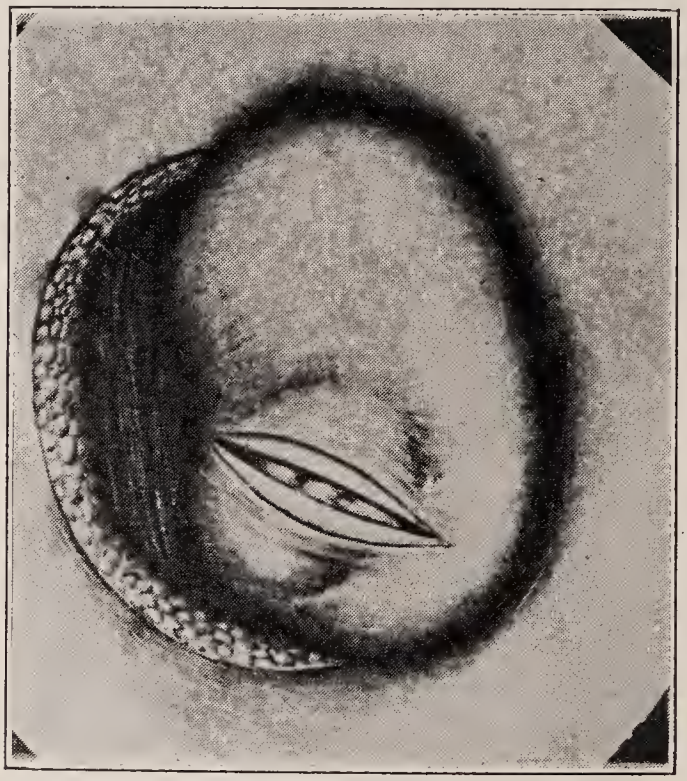


Fig. 19. Case 14.

dependable. Even a lipoma, as it tends to push itself out from its containing capsule, may press upon nerves and cause considerable pain. In the following case the breast which was involved in the tumor was congenitally somewhat larger than the other, the nipple was higher, and the patient complained of pain.

Case XIV. *Multi-lobular Adenoma.* S., unmarried, 19 years of age. Admitted to the New York

Polyclinic Hospital April 6, 1915. Examination revealed a tumor, the size of a hen's egg, situated deep in the right breast, just above the nipple. An incision was made along the outer margin of the breast (Fig. 17), the breast was turned up, the capsule of the tumor incised (Fig. 18), and the tumor removed (Fig. 19, natural size). The ducts were preserved. The wound, closed with interrupted stitches (Fig. 20), gave no perceptible scar-



Fig. 20. Case 14.

ring. Fig. 21 shows the result, May 4, 1915. The relative size of the breasts and the position of the nipples are shown in this picture.

The tumor should be attacked from behind the capsule when deeply placed in the gland. When superficial it may be reached from in front. By following this general rule there will be less injury to normal glandular tissue.

Case XV. *Fibro-adenoma.* S., single, 32 years

of age. First consulted me January 24, 1910. Both nipples were found retracted, as shown in Fig. 22, and, according to the patient, had always been so. In other words, she had congenital retraction of both nipples. A year before I saw her she observed a tumor in the left breast, which became painful. The tumor was removed and the breast saved. Pathological examination of the tumor verified the diagnosis of non-malignancy.

Case XVI. *Fibro-lipoma.* V., 54 years of age. Consulted me December 31, 1909. Examination re-

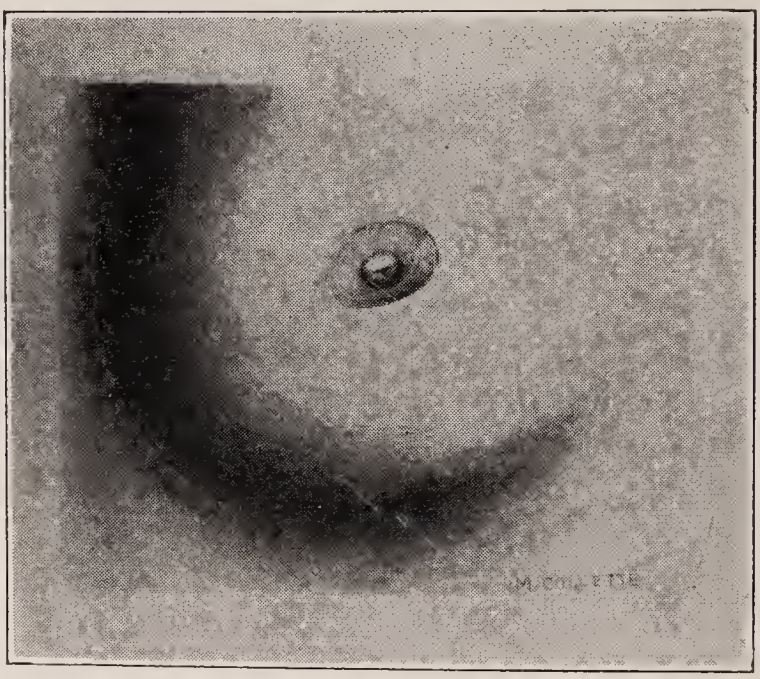


Fig. 21. Case 14.

vealed a tumor in the left axilla, extending to the upper margin of the breast (Fig. 23). It was first noticed five years before, and had developed slowly until of late, when it began to grow more rapidly. It had also become painful. The nipple was retracted, as shown in the picture. Upon questioning the patient it was found that this was a case of

congenital retraction of the nipple. The tumor was removed, and proved, upon pathological examination, to be non-malignant.

In a woman of so-called cancerous age, the pres-

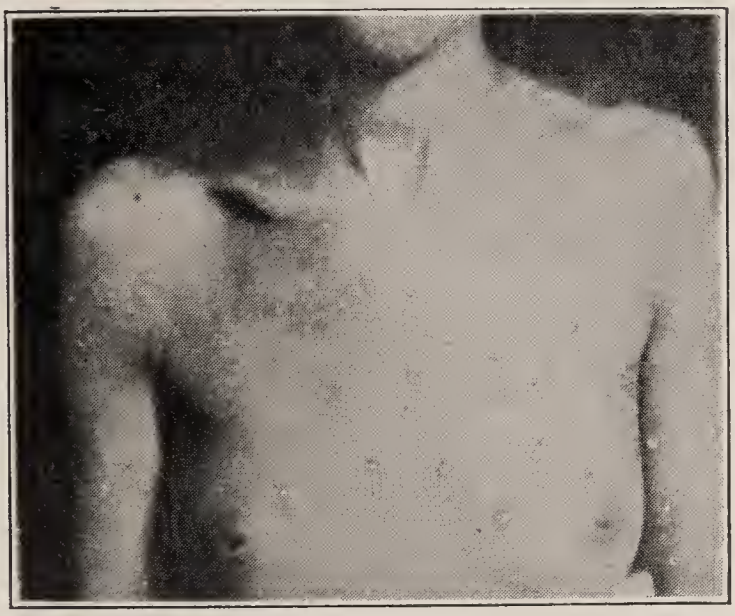


Fig. 22. Case 15.

ence of a slow-growing tumor which suddenly began to grow rapidly and to become painful, asso-



Fig. 23. Case 16.

ciated with retraction of the nipple, was strongly

suggestive of malignancy. Yet one must not lose sight of the fact that even under these circumstances the tumor may be benign.

By way of contrast the following case is cited:

Case XVII. *Carcinoma.* R., married, 27 years of age. Admitted to the New York Skin and Cancer Hospital April 17, 1915. Nothing abnormal was noted on inspection of the breast and axilla, except that the nipple and breast of the left side



Fig. 24. Case 18.

were slightly higher than the other, as may be seen from Fig. 24. Upon palpation, however, a tumor the size of an orange was found in the inner and lower quadrant of the left breast discovered by accident, there being no symptoms of its presence. The breast was removed, and miscroscopic examination of the tumor confirmed the diagnosis of malignant disease of breast and axillary glands.

The foregoing cases are cited, not because they

are unique or uncommon, or because they involve any new or difficult technic, but because they may serve to emphasize the ease with which a wrong diagnosis may be made, the wrong treatment employed, the prevention of cancer interfered with, and the patient sent out into the world unnecessarily mutilated and with the mental hazard of being labeled "cancer." They are cited also in the hope of emphasizing anew the pitfalls into which the campaign of education as it applies to laymen may lead us. Last, but by no means least, such cases, it is felt, may serve to impress upon the general practitioner his responsibility in the matter of the conservation of the human breast, and of furthering the campaign of education along rational and safe lines.

In other words, it is hoped, by these cases and the points which they suggest, to reiterate tellingly what I have said elsewhere, that the campaign of education against cancer must begin within the medical profession. The general body of the physicians must be taught either to treat these conditions in accordance with the accepted facts concerning the disease, or to refer such patients at once to surgeons or specialists of wider experience.

2 of 2.



MR. ELBERT HUBBARD ON VACCINATION; A CRITICAL EXAMINATION.

A SPECIAL ARTICLE.

Reprinted from the
ST. LOUIS MEDICAL REVIEW
December 19, 22, 29, 1906; January 5, 12, 1907.

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469.

MR. ELBERT HUBBARD ON VACCINATION; A CRITICAL EXAMINATION.

Calumnies and misstatements, in themselves too outrageous to be worthy of notice, sometimes acquire an adventitious importance from the circumstances under which, or the influence of the person by whom, they are proclaimed.

Mr. Elbert Hubbard, of East Aurora, N. Y., publisher and editor of *The Philistine,* is a man who by dint of holding very extraordinary and unconventional views—in some of which we agree with him—and in consequence of a facility of style, a forcibleness of expression, and an insinuating power of suggestion, carries weight with a considerable circle of readers, takes up the cudgels in the December number of the *Philistine* against vaccination, and gives utterance to some very pronounced views thereon.

Views, however, are one thing, and facts another. The question, for instance, of the propriety of compulsory vaccination is a matter of views. It is conceivable that a man may concede every claim that is made for the prophylactic virtue of vaccination in regard to small pox, and yet be of opinion that the interference with individual rights involved in the principle of compulsory vaccination is more injurious to humanity, to say nothing of

its injustice to the individual, than the vicarious protection it affords to others who, if vaccination is the prophylactic it is asserted to be, can protect themselves and theirs by being vaccinated themselves, without forcibly vaccinating others who object to be vaccinated. Such a question is a matter for argument, not for demonstration.

But when it comes to a question of what vaccination has done or can do, and what was done by those who introduced vaccination, and is being done by those who practise it today as a prophylactic measure, this is a question of facts not views, and its solution is a matter for demonstration, not argument.

Mr. Hubbard has essayed to give us a picture of how the vaccination doctrine and practice originated and how it is maintained. And from his conception of how this happened, he attempts to argue against the value of vaccination as a prophylactic.

Now in one part of his article, Mr. Hubbard says: "The degree of M. D., is given on the pupil's proficiency in memorizing things told him by lecturers and printed in books. These lecturers get their knowledge from books and the men who wrote the books got their information from lecturers and books."

We shall have more to say by and by on this proposition as regards present day medical education; meanwhile we wish to point out that Mr. Hubbard, equally with ourselves and the authorities we shall quote, was not present at the end of the seventeenth century and the beginning of the eighteenth, around which

period this question revolves, consequently, like ourselves he is dependent upon "things told him by lecturers and printed in books" for the statements he makes on the subject. Mr. Hubbard, however, makes all his assertions as to what somebody said or did a hundred years or so ago with a jaunty dogmatism and with an utter disregard for substantiation, however opposed they may be to what others have learned from analogous and equally credible, if not identical, sources, that scorns to offer any check on the correctness of its data. Effective as this procedure is with a certain class of mind, we shall not emulate it, but shall endeavor in matters of fact to refer to our sources of information, which can, on challenge, trace the responsibility back until we arrive at the principal actors themselves.

It is our purpose to comment on Mr. Hubbard's article clause by clause, Mr. Hubbard's statements being reproduced in small type, as quotations, our comment retaining the larger type.

The article in question is entitled: Heart to Heart Talks with Philistines by the Pastor of his Flock.

Mr. Hubbard opens his article as follows:

> The idea of inoculating the human body with a poison in anticipation that otherwise the person may contract a disease, was first introduced into England from India in the latter part of the Eighteenth Century.

There is, to begin with, a slight inaccuracy in this opening sentence; not very material to the issue, perhaps, but sufficient to suggest the

advisability of a careful investigation as to Mr. Elbert Hubbard's accuracy in general.

"The idea of inoculating the human body with a poison in anticipation that otherwise the person may contract a disease, was first introduced into England," not "from India," and not "in the latter part" of the eighteenth century, but from Constantinople, by Timoni, a physician, in a communication to the Royal Society of London, in 1714.[1] The idea was further promulgated in England from Adrianople, in European Turkey, and put into practice on her own son by Lady Mary Wortley-Montagu, in 1717—i. e., in the *first quarter* of the eighteenth century.[2]

In the year of 1796, Dr. Jenner heard a milkmaid say, "I can never have smallpox, because I have already caught it from a cow."

Conceded in effect. We have no means of verifying the justification for the quotation marks, which, of course imply that the words used were the *ipsissima verba* of the milkmaid.

Upon investigation Dr. Jenner found that cows occasionally had a disease of the udder marked by an eruption that very closely resembled in appearance the smallpox pustule. If the hands of the milkers were chapped they occasionally caught the disease from the cow, and their hands and arms would break out in sores.

This proposition is conceded.

It was a legend held as a fact by the peasantry that such persons were immune from smallpox,

[1]Roswell Park; Epitome of the History of Medicine, 1889, p. 225.

[2]References passim. Any good encyclopaedia, for instance.

having already had the disease, it being believed that you could have smallpox only once.

This exemplifies a favorite form of fallacy much affected by Mr. Elbert Hubbard—the *petitio principii.* The point at issue is whether persons who have had cowpox are thereby rendered immune (in any degree, and if so in what degree) to smallpox. Mr. Hubbard speaks, at the outset, of this view as "a legend held as a fact by the peasantry." Now the word legend,*per se* (though it undoubtedly does convey to the minds of a large number of people the idea of a myth, which again implies to many the concept of entire falsity, in place of its proper significance of a fanciful or imaginary presentment of an important truth) may perhaps be used without prejudice, but the expression, "it was a legend held as a fact," undoubtedly assumes proof that the legend was not a fact. This is a begging of the question. But it is done so dogmatically and is repeated throughout the entire article in so many shapes and forms as to become a very powerful suggestion to those not provided with the data and mental equipoise to enable them to judge the issue solely on the premises as proved. Mr. Hubbard is undoubtedly a master of the art of suggestion.

And so Dr. Jenner's "discovery" came from the chance remark of an unthinking, unscientific country wench.

Here again we are cunningly introduced to an insinuating suggestion. "Is it likely," asks Mr. Hubbard in effect, "that a discovery resulting from 'the chance remark of an un-

thinking, unscientific country wench', can itself be other than irrational and unscientific?" To this we reply that it is perfectly likely that a most valuable and highly scientific discovery may result from such an insignificant cause. Dr. G. M. Gould[3] very sagely remarks: "I have been struck by the fact that the majority of great medical discoveries, truths and instruments, have not been made completely and suddenly, but have been led up to by preliminary and progressive steps, and that the layman has so often made these discoveries prior to the medical practitioner. This great medical truth is, indeed, but an illustration of the general law that all professional progress, in whatever branch of study, is somehow or other a result of stimulus from without." Dr. Gould quotes Dr. Benjamin Rush's wise dictum to his students, too much, we regret to say, ignored by individual members of our profession, that there are to be learned many useful methods of treatment, even from "quacks and old women."

In regard to this particular observation "by the peasantry," given utterance to by an "unthinking and unscientific country wench," it is a somewhat remarkable coincidence that the same observation—viz., that persons who have had cowpox are, generally speaking immune in regard to smallpox—has been independently made by other unthinking and unscientific peoples so far removed as to both

[3]Medical Discoveries by the Non-Medical, by G. M. Gould, M. D. Journ. Amer. Med. Assoc., May 30, 1903.

time and locality from the British peasantry of the eighteenth century, as certain tribes of Indian shepherds in the Mexican Cordilleras, who had noted the fact, says Alex. v. Humboldt, since the earliest recollection of men; the Elihats in Beluchistan (Brun); the Hindus; and the Turks (noted by M. Auban, a physician at Constantinople, before 1803)[4] not to mention the fact that the same belief, founded on observation and not on hearsay, was deeply rooted among many agricultural peoples in many parts of Europe. The very universality of this deduction among peoples in no way related is strong presumptive evidence of some underlying truth. Mr. Hubbard's suggestion is therefore a gratuitous and unproved assumption, the contrary having the weight of likelihood in its favor.

Dr. Jenner made investigation and found that no person who had had cowpox had contracted smallpox. Or, more properly, he could not discover that any person who had had cowpox ever had smallpox. It was also the belief that cross-eyed persons and hunchbacks were immune from smallpox, but Dr. Jenner says nothing about this.

A *suggestio falsi,* namely, that the belief concerning the immunity against smallpox conferred by cowpox, even after scientific investigation rests on no better basis than other beliefs not investigated, and seemingly absurd, because both happened to be prevalent among

[4]See a letter to the Times originally published in 1803, and republished by that Journal in 1903. Brit. Med. Journ., October 31, 1903, p. 1158.

the superstitioous and uneducated peasantry of a certain place and time.

Dr. Jenner announced his discovery to the Royal Society and he also informed them that he had inoculated several people who had had cowpox with smallpox virus and there were no ill effects.

This proposition is conceded.

No doubt Dr. Jenner believed there was a direct relationship between cowpox and smallpox, the only difference to him being that cows had cowpox and man smallpox; and if a man had smallpox once he could not have it again. These two things were to him actual, vital, true.

This proposition is also conceded.

We believe things first, and prove them afterward, or not at all.

If this statement is intended as a universal affirmative proposition, viz., that all people believe things first and prove them afterwards, or not at all, it is denied. If it is to be taken particularly, as applying to some people, it is conceded. We venture to add that, presupposing Mr. Hubbard's good faith, he is a conspicuous example of its truth as a particular affirmative proposition, for so many misstatements as we shall endeavor to show that he has crowded into one article, bespeak either dishonesty or lack of verified information (even to the extent to which information is verifiable). *Ex hypothesi,* he is not dishonest; *ergo*, he has taken upon himself to write an article on a controversial subject without first verifying his assertions. Mr. Hubbard is undoubtedly a plausible writer and to the multi-

tude plausibility of statement often passes for proof.

> And so to prove his case Dr. Jenner declared that he had inoculated his cowpox friends with genuine smallpox and there were no ill effects. It is much more likely that in his excess of zeal Dr. Jenner lied, than that he deliberately ran the risk of laying himself open to the charge of committing murder.

This is an example of the form of *petitio principii* known as the "disjunctive syllogism," which consists in enumerating only those alternatives which favor one view and ignoring the others. A thoughtless person, for instance, might assume from this statement that Jenner had a choice only between lying and laying himself open to a charge of murder. Now, what is murder? Webster defines murder as "the act of killing a human being with malice prepense or aforethought,express or implied; homicide with malice aforethought." Obviously, then, malice—not necessarily a desire to kill, but at least in some way to harm the subject by the act that results in killing—is of the essence of murder. Consequently, even had the asserted inoculation by Jenner of his subjects with genuine smallpox resulted in death, there was no reason to fear a charge of murder in the absence of any proof of some malicious intent. And no such malicious intent ever has been suggested, much less proved. Consequently there is no ground for assuming that in what Jenner professed to have done he would, had it been a fact, have laid himself open to the charge of committing murder.

As a matter of fact, we have cases in point within the past decade in relation to yellow fever. The Yellow Fever Commission, consisting of Drs. Reed, Carroll, Lazear, and Agramonte, induced several persons, including themselves be it noted, to allow themselves to be bitten by infected yellow fever mosquitoes, the scientific object being to establish the fact that the stegomyia that had fed on a yellow fever patient was the agent through which the disease was transmitted to others. The experiments were subsequently repeated by Guiteras and others to establish other points, and more than one case of yellow fever terminated fatally from the inoculations. This was not in a remote country district in the eighteenth century, but in the glare of the publicity that is the inevitable accompaniment of rapid transportation and almost instantaneous communication by telephone and telegraph, with wide dissemination of news by the ubiquitous daily papers, and under the eye of the government itself. Has any one laid a charge of murder against these experimenters? And if so has such charge ever been committed for trial? No.

And if the yellow fever investigators, on whose investigations death actually followed, did not "lie" in their excess of zeal, what justification can anyone—who does not "believe things first, and prove them afterward, or not at all"—show for assuming that Jenner "lied?"

Doctors deal with the sick, the weak, the nervous, the fearful, and that there is a constant temptation to a physician to prevaricate is a fact no doc-

tor will deny. Also—the soft pedal there, professor, please—it is a fact that doctors occasionally overcome the temptation by succumbing to it.

This statement is simply a truism of human nature in its entirety asserted of a part thereof as though it applied only to that part. In the same sense that all people prevaricate as a mere conventionalism—as when, for instance, one writes "My dear Sir" to a person for whom one entertains no trace of affection whatever, or gives the order for "not at home" when one means simply an unwillingness to be disturbed by visitors, and in a hundred other little ways; or, as when one refrains from saying all that would truthfully be said if one gave utterance to all one's convictions—as for instance when Mr. Hubbard in this identical *Philistine,* describing his position at a banquet between a bishop of the Episcopal church and one of the Roman Catholic church, says "while I refrained from any reference to Torquemada, Savonarola, Pope Alexander Borgia and Henry the Ate [*sic*], they in turn had only words of kindness for Goliath," etc.; or yet again, as when out of kindly and well bred consideration for others, one looks pleasant and replies "All right, thanks" to the question how we find that [cheap and nasty] cigar, or says "delicious" when the new young housewife asks us what we think of her coffee; in any one of these senses doctors, like nearly all other mortals, are in not only constant temptation to prevaricate, both in and out of their professional duties, but occasionally "overcome it by succumbing to it."

If, however, Mr. Hubbard means to assert that "the average physician" is habitually more regardless of veracity than, let us say, the average Elbert Hubbard, using that distinguished writer's name as a generic term, the assertion is denied. Neither does Mr. Hubbard substantiate it by the next assertion, to-wit:

> Doctor Tilden says that the average practising physician lies all day long, but Tilden lives in Denver, the home of heresy.

That Dr. Tilden should have actually made the aforesaid assertion, proves, or at least may be assumed to prove, that such is Dr. Tilden's opinion, which at best can only cover the extent of his personal experience. The statement may or may not be perfectly true as regards Dr. Tilden and also as regards the average of the physicians whose methods Dr. Tilden has been in a position to observe, but that experience, however extended it may be, is a very long way from justifying the extension of the statement to the entire medical profession of the civilized world.

We say this with all due respect to Dr. Tilden, who, for anything we know to the contrary, may be a most estimable member of our profession, and whom we must beg to excuse us for making so free with his name, and to remind him in extenuation that it was Mr. Hubbard who made him an exhibit in the case.

> However, to me, it is much more to the credit of Jenner that he lied than that he did the thing he said he did.

This is another admirable example of Mr. Hubbard's ingenuity in the art of begging the question. Above, Mr. Hubbard contented himself with suggesting that it was "more likely" that Jenner lied, than that he did what he said he did; he now, apparently, considers that this suggestion of his has proved the fact, and consequently asserts that Jenner did lie, and did not do the thing that he said he did. We are beginning to comprehend on what premises Mr. Hubbard asserted above "We believe things first, and prove them afterward, or not at all."

Those good men who confess murder, simply in order to secure transportation, are not so bad as men who actually have killed their kind.

This may be a perfectly true statement, but it is in fact as irrelevant as it can possibly be true; though it may be of considerable value to Mr. Hubbard's peculiar style of argument, as tending incidentally to impress on the unthinking mind the question he has so adroitly begged.

That Dr. Jenner could very easily make a pretence of inoculating a person with smallpox virus is certain, but that he should have actually done so is doubtful.

In its grammatical sense we concede this proposition. It certainly *is* doubtful that Dr. Jenner should have made a pretence of inoculating a person with smallpox virus, notwithstanding the certainty that he could very easily have made such a pretence.

We presume, however, that Mr. Hubbard's meaning is, that while Jenner could easily

have pretended to inoculate a person with smallpox virus, it is doubtful whether he would ever have dared actually so to inoculate a person. To this we can only say that we fail to see why Dr. Jenner should not just as likely have inoculated a consenting person with smallpox, as others besides Jenner did, and as Drs. Carroll, Reed, Lazear, Agramonte, and Guiteras actually inoculated quite a number of consenting persons with the more deadly yellow fever, all having in view the same object, the extension of knowledge which it was hoped might prove of benefit to the human race.

Professor Waterhouse of Harvard University, who introduced vaccine into the United States in the year 1800, vacinated his children, and then to prove his faith took them to a house where there was smallpox. Afterward, it was admitted that he only took them into the yard, or past the house where the patient lay. As the children did not contract the disease, Doctor Waterhouse jubilantly announced the scientific fact of their immunity.

We do not recollect, although we have read something of the early history of vaccination, to have heard of Dr. Waterhouse's subsequent admission, that although he had affirmed as proof of the immunity conferred upon his children by vaccination that he had taken them into a house where there was smallpox, he had nevertheless not taken them into the house at all, but only "into the yard or past the house where the patient lay." If any such statement was made by anyone, it will most probably turn out, on investigation, to be on a par with

a fact recorded by Dr. Welch.[5] After Waterhouse had vaccinated two of his sons, a servant boy, and a one-year-old infant and its nurse, "A few of the physicians of Boston and adjacent towns who felt an interest in the matter visited the subjects for the purpose of learning something about the new disease. The visits of these physicians gave rise to a malicious report that one of Waterhouse's children was so ill from the 'new inoculation' as to require a consultation of several members of the profession."

Our supposition strikes us as eminently likely; far more so than Mr. Hubbard's supposition that Jenner "lied," simply because, out of several alternatives, Mr. Hubbard elects to ignore all the possible harmless ones and selects only one that would have been as perilous as it was unlikely, not to say impossible.

But this is not all. Dr. Welch continues:

"A number of persons now applied to Waterhouse for the benefits of vaccination, but he declined to vaccinate any one residing outside of Cambridge until he had proved that this new agent conferred protection against smallpox. To demonstrate this he applied to the smallpox hospital at Brookline for certain privileges. His letter, in part, reads as follows:

"'I have collected everything that has been printed, and all the information I could procure from my correspondence respecting this distemper (cowpox), and have been so thoroughly convinced of its importance to humanity that I have procured some vaccine matter and therewith inoculated seven members of my family. The inoculation has proceeded

[5]The Work of Jenner and his most Faithful Disciple Waterhouse. By William M. Welch, M. D., American Medicine, June 7, 1902, p. 962.

in six of them exactly as described by Woodville and Jenner; but my desire is to confirm the doctrine by having some of them inoculated by you.

"'I can obtain variolous matter and inoculate them privately, but I wish to do it in the most open and public way possible. As I have imported a new distemper, I conceive that the public have a right to know exactly every step I take in it. I write this, therefore, to inquire whether you will, on philanthropic principles, try the experiment of inoculating some of my children, who have all undergone the cowpox. If you accede to my proposal, I shall consider it as an experiment in which we have cooperated for the good of our fellow citizens, and relate it as such in the pamphlet I mean to publish on the subject.'

"Dr. Aspinwall, who was the physician in charge of the hospital, at once signified his willingness to assist in the experiment, and about two months after the vaccination of Waterhouse's children they were sent to the hospital and not only freely exposed to the infection of smallpox, but also inoculated with fresh matter taken from a patient. Finding the children resisted the disease absolutely when subjected to this most crucial test, Waterhouse exclaimed: 'One fact in such cases is worth a thousand arguments.'"

Granting, then, that some one such discrepancy occurred as that on which Mr. Hubbard builds his depreciation of Waterhouse's proof of vaccinal immunity of smallpox, the fact, if fact it be, that the children were actually inoculated with smallpox, as completely disposes of his objection as that the greater includes the lesser. We say "if fact it be," not because we have any reason to doubt the accuracy of the statements made by Dr. Welch, who, we have been informed, is not only a man of considerable erudition, but is also credited with no greater tendency to mendacity than the "average" man, including Mr. Hubbard himself;

but because no proposition is accepted in a logical disputation until it has been either admitted, or sustained in face of challenge. And possibly Mr. Hubbard may think it "more likely that in his excess of zeal" Dr. Welch also "lied" in making these statements; or that perhaps (since neither he nor Mr. Hubbard was present at the time of the origin of vaccination and both must consequently be equally dependent for their premises upon historically delivered information and not upon personal knowledge of facts) if not Dr. Welch, at least his authorities "lied."

One other consideration forces itself upon us in this connection. If neither Dr. Welch nor those on whom he depends, "lie," other people besides Jenner "deliberately ran the risk of laying" themselves "open to the charge of committing murder." Taken in connection with the facts relating to yellow fever, which have occurred within the past ten years, and the actors in which are all (save one who lost his own life in the cause) alive to go into the witness box, we are by no means convinced by Mr. Hubbard's assertion that "it is much more likely that in his excess of zeal Dr. Jenner lied, than that he deliberately ran the risk of laying himself open to the charge of committing murder."

The particular reasons in favor of lying in a particular assertion being thus removed, we should be glad to know as regards general assertions what general reasons can be adduced that shall convict Mr. Hubbard's opponents of

a tendency to lying while leaving Mr. Hubbard exempt therefrom.

Mr. Hubbard continues:

> So persistently did Dr. Jenner plead his cause, that he got permission to vaccinate several thousand soldiers in the British Army. The number of smallpox cases the next year was much reduced.

We are unable to verify these two statements because no date is given, but inasmuch as, whether correct or incorrect, they do not support an impeachment of the value of vaccination, they may pass without comment.

> Thereupon the Government voted Dr. Jenner one hundred thousand pounds and a life pension, and pinned to the breast of his coat several medals. That confirmed it—a folk-lore superstition became a scientific fact. And the falsehood went spinning down the centuries to continue indefinitely, or until some heroic person should risk his life and reputation by challenging it.

This proposition contains an inaccuracy and another example of the *petitio principii.* The Government did not vote Jenner one hundred thousand pounds ($500,000). In 1802 it voted him ten thousand pounds ($50,000), and in 1807 it gave him an additional grant of twenty thousand pounds ($100,000) thirty thousand pounds ($150,000), in all.[6] On what Mr. Hubbard bases his assertion that it also gave him a life pension, we do not know. We again have the question at issue —that the immunity conferred by cowpox against smallpox is "a folklore superstition" —begged, with the added *suggestio falsi* that

[6]See any good Encyclopaedia, or any standard account of Jenner's life.

the ground upon which a folklore belief became ultimately accepted by the medical profession of the entire civilized world was that the English government awarded Jenner a sum of money The term "falsehood" is, of course, another *petitio principii.*

And fortunately they did challenge it. At first we smiled and called the challengers infidels. Then we hissed them as fools. Next we got busy and passed laws making vaccination compulsory, forbidding school advantages to all who did not participate in the medical fetich.

With the exception of the *petitio principii* in terming a belief in vaccination "a medical fetich," this proposition is conceded as to its statement of fact, allowance being made for controversial hyperbole. As to the estimate placed upon the facts by the word "fortunately," etc., we have already conceded that Mr. Hubbard is a master of suggestion.

But within three years. a change has come about and laws making vaccination compulsory are inoperative, simply because they are not backed up by public opinion.

This proposition is conceded as regards certian localities; not as regards the civilized world as a whole.

We would add this comment: On page 7 of the *Philistine,* Mr. Hubbard makes the assertion, quoted in our introductory remarks, that the sources of information requisite to graduate as M. D. consist of the statements uttered by lecturers and published in books. This today is only in very small part true with regard to the training of physicians; and even then, as regards a large part of medical know-

ledge, it is subsequently reinforced for most physicians, or at least the opportunity for its reinforcement is afforded, by actual practice; and particularly is this the case in regard to vaccination and its effect upon the lessening of the incidence of smallpox and the mitigation of the severity thereof in the comparatively trifling proportion of cases in which smallpox does occur within a dozen years after a successful vaccination; for nobody asserts that the immunity conferred by vaccination does not in the course of years become exhausted. "Public opinion," on the contrary, on this as on every technical subject, medical, military, legal, artistic, industrial, and what not, always remains, for the majority of the public, mere "information derived from lecturers and books," and is never reinforced by actual experience. Its judgment is always and wholly at second hand. There are, of course, individual exceptions, but they bear much the same relation to the whole as a bucket of water would to a decent sized lake.

In this connection we desire to quote the following passage from the *Lancet*:[7]

"The historians upon whom it may hereafter devolve to analyze and to record the events of the beginning of the twentieth century will probably be compelled to admit that the inevitable errors of the time were in no small degree attributable to an undue estimate of the value of what is called, and often miscalled, 'public opinon.' There has somehow arisen a curious superstition to the effect that people of ordinary intelligence, who have received an ordinary education, are capable of arriving at sound

[7]Lancet. Editorial article, Public Opinion, November 17, 1906, p. 1373.

conclusions concerning questions which they have not studied, and of which the solution may really turn upon data with the very existence of which they are wholly unacquainted. We are prone to forget that, although the partially instructed man may hold pronounced opinions upon many subjects —the word opinion being used in its proper sense to signify a conclusion resting upon grounds which are insufficient to afford certainty—yet that the insufficiency of these grounds is more likely to induce the holders of the opinions to seek refuge from their uncertainty in declamation than to aim at its removal by enquiry. On any particular topic which may be engaging attention at the time the current opinion temporarily espoused by the majority is usually declared by that majority to constitute the vox populi; and then we are reminded that some person who flourished in the dark ages, and who is only known to us as having been quoted by William of Malmesbury in the twelfth century, declared the vox populi to be also vox Dei."

Following Mr. Hubbard's line of argument in relation to the classing of the belief in cowpox immunity to smallpox on a par with the beliefs as to the like immunity of cross-eyed persons and hunchbacks, simply because both beliefs happen to have been held—if Mr. Hubbard's statement in this particular is more accurate than some of his others—by the same class of people in the same era, we may ask if Mr. Hubbard, who so confidently rests his case upon "public opinion," even in matters outside its own sphere, is prepared to accept as equally worthy of confidence all other beliefs prevalent from a time antedating the twelfth century to date, e. g., the confident belief in witchcraft, or the belief "that most of mankind were made to be damned, and that a man who had but one parent was necessarily better than those who had two." (*vide p. 27*)

The explanation of this changed attitude of a certain part of "public opinion" on this subject is thus admirably expressed by the *Lancet* in the editorial article before referred to:

"The prevailing delusions concerning the value of unskilled opinion, and especially of unskilled opinion in relation to medical and scientific subjects, are very largely fostered and maintained by a certain section of the press, which of recent years has begun to assume a tone of authority and knowledge concerning every question submitted to the public, and, as a rule, to display an equal and impartial ignorance concerning them all."

Mr. Hubbard is, we believe, a great admirer of Mr. Bernard Shaw, whom he regards as an apostle of enlightenment for the present age. The *Lancet* fortunately quotes Mr. Shaw's opinion as to the qualifications of scientifically untrained writers on scientific subjects, as follows:

"Mr. Bernard Shaw has lately given to the world a sufficiently graphic description of the casual staff of 'Dick Swivellers' by whom many paragraphs and articles on scientific subjects are presumably composed. We fear he is correct in his belief that the majority of readers prefer Dick Swiveller, 'because his high spirits are amusing, his slovenly colloquialism [e. g., "Henry the Ate," p. 13] is familiar and intelligible, and his inveterate inaccuracy and illiteracy are matters of indifference.'"

Vaccination has got to go along with black cat salve for itch, sheep-nanny tea for mumps and that gentle assumption that we must all take sulphur and molasses in the spring.

Opinion merely, to which Mr. Hubbard is entitled and welcome, if it makes him any happier. The word "opinion" is used in the sense formerly given in the quotation from the *Lancet*, viz., "a conclusion resting upon

grounds which are insufficient to afford certainty."

Forty years ago doctors were a deal more sure of their position than now. They would give a sick man Glauber salts, calomel, iron and quinine, and the man got well—or didn't. If he recovered they would say he got well on account of the medicine, when perhaps he recovered in spite of it.

This is equivalent to stating that doctors are today on the whole less dogmatic than of old; that they accept positive conclusions inadequately sustained by evidence or based merely on tradition and "information from lecturers and books" less readily; and that they have a lesser tendency to ignore the "unknown quantity" in the solution of the equation than aforetime; and we are heartily glad to agree with Mr. Hubbard on this point.

But that being the case, it is remarkable that the medical profession as a whole, and more especially that portion of it consisting of medical scientists, stands, after more than a century of comparative investigation and clinical experience, more strongly entrenched than ever in its belief in the prophylactic efficacy of vaccination. It is regretfully to be noted that *pari passu* with this increased caution, this decreased dogmatism, of the medical profession, when dealing even with subjects that are within its own special sphere of practical knowledge and experience, the tendency of "public opinion" to assume a dogmatic attitude of infallibility on subjects entirely outside of its own sphere of practical knowledge and experience, in which it is necessarily absolutely dependent upon "information [not to say mis-

information] from lecturers and books," is increasingly manifest. Mr. Hubbard, we believe, is a lecturer; the *Philistine,* doubtless, is a book.

In any event, since then the entire scheme of medicine, as it then existed, has been abandoned and we have a new materia medica. Doctors, now know, and admit, that most people who are ailing would recover without medicine, quite as quickly as with.

This proposition is denied. "The entire scheme of medicine, as it then existed," has certainly not been abandoned, though it has developed. Neither have we "a new materia medica," if by that is meant that we have thrown aside as worthless all that was formerly valued and have accepted exclusively new things in their place. Medicine, like all branches of knowledge, has developed, is developing, will continue to develop. But development is a matter of organic growth, not a process akin to razing one building and raising another in its place. We have cast aside a good deal that further experience has proved to be overvalued or even of no value at all; we have added new material formerly unknown; but a comparison of the present day U. S. and British Pharmacopoeias with the formularies of a century and more ago will clearly demonstrate that we still continue to find useful a great deal, perhaps much the larger part, of the armamentarium of our forefathers.

It is conceded that, as a body, we recognize more clearly than our predecessors the *vis medicatrix naturae*, and, are, in consequence

increasingly inclined to endeavor to aid Nature rather than to try to compel her.

The plan of deliberately acquiring one disease in order to become immune from another, is founded on a medical superstition and belongs to an age when the best educated men in the world believed, and all colleges taught, that most of mankind were made to be damned, and that a man who had but one parent was necessarily better than those who had two.

By "an age when the best educated men believed that a man who had but one parent was necessarily better than those who had two" is meant, presumably, the age when people believed in the immaculate conception of Jesus Christ. We imagine that there is still a not inconsiderable proportion of people in the civilized world—that portion of the world in the United States and Europe—that would not be disposed to regard that belief, whether they accept it or not, as on a par with the belief about the immunity of the crosseyed and hunchbacks to smallpox. Yet this is what, according to Mr. Hubbard's method of confusing simultaneity in time with identity as to credibility, they should do.

Further, this belief is undoubtedly endorsed by Scripture; and on p. 7 of the *Philistine*, Mr. Hubbard considers a belief in witchcraft more reasonable than a belief in vaccination because "witchcraft has the endorsement of Scripture."

"Mark you this Bassanio,
The devil can cite scripture for his purpose."

Vaccination was the invention of men who thought you had to be very miserable in this life in

order to be happy hereafter; and in order to be happy hereafter you must be idle, have all the things that had been withheld from you and which bad people here enjoy, including the idleness.

The irrelevance of this proposition is, we imagine, altogether too obvious to need extended comment.

The religious opinions, whether sound or unsound, whether credible or absurd, of the men who "invented" vaccination, are a question of views, and therefore susceptible of argument, not demonstration; whereas the history of the discovery and testing of vaccination and the weight of evidence as to its prophylactic value against smallpox are questions of fact to be met by demonstration, not argument.

[Erratum. In our first instalment of this article, page 19, we stated that "all (save one who lost his own life in the cause) were alive to go into the witness box." This was an oversight. Dr. Reed, also is dead. By "actors," of course, we meant actors, not passive subjects, several of whom are dead.]

Mr. Hubbard now enters upon the quasi-scientific side of his remarks. He says:

Inoculation by cowpox virus as an immunity for smallpox, causes a disease called vaccinia.

This proposition is conceded.

That vaccinia is a reduced or mild form of smallpox is a barren [sic] assumption—the germ of smallpox, unlike the typhoid germ, never having been discovered.

We presume the author means a "bare assumption," but in any event the conclusion is

inconsequent on the premises stated; for although it is conceded that the smallpox germ is, if not undiscovered, at least in dispute, it is denied that the proof of the essential identity of vaccinia with smallpox is dependent solely on prior identification of one particular "germ" as the cause of both diseases.

[Strictly speaking this is all we are called on to oppose to Mr. Hubbard's assertion. The onus of proving his assertions lies on Mr. Hubbard. There is no onus upon us to disprove general assertions the evidence for which is not forthcoming. For the benefit of our readers, however, we shall ourselves adduce some of the arguments against certain of Mr. Hubbard's general and unsupported statements.

While it is true that the "germ" of smallpox is as yet undiscovered, or is at least in dispute, there is absolutely no question of the fact that the histology of the lesions of vaccinia and variola respectively is so similar, and so different from that of the lesions of all other diseases, that practically all medical scientists are satisfied that the diseases are identical.

Thompson, of St. Louis University, has absolutely demonstrated[8] that a specific laboratory diagnosis of smallpox (or vaccinia) can be made microscopically from a skin section of a smallpox (or vaccination) lesion, notwithstanding the fact that the microorganism of the disease has not yet been definitely discovered; and this observation of his has been

[8]Thompson. Journ. Amer. Med. Assoc., April 22, 1905.

confirmed by other observers, *e. g.*, Howard, of Western Reserve University (independently), and Tyzzer, of Harvard. The specificity of the lesion had also been previously noted by such prominent investigators as Councilman, of Harvard, and Ewing, of Cornell.]

The immunity is an assumption, absolutely unproved.

This proposition is absolutely denied.

[There are several points of view from which the value or otherwise of vaccination as a protection against smallpox may be regarded. They are:

1. The direct inoculation test.

2. A comparison of the prevalence and mortality of smallpox for sufficiently long periods before and after the scientific discovery of vaccination.

3. A comparison of the liability to smallpox of particular groups of persons (e. g., physicians, nurses, and helpers about smallpox hospitals who, deprived of such advantages as isolation, etc., come into constant contact with smallpox, relying solely on vaccination for protection) with the liability thereto of the general public.

4. Experience of the modifying effect of vaccination during epidemics.

5. A comparison of the mortality from smallpox in vaccinated and non-vaccinated communities respectively.

I. *The Direct Inoculation Test.*—This is no longer possible of application in the human subject in consequence of the (very proper)

laws against variolous inoculation. We have in the past, however, the evidence of Jenner, who wrote in 1801, says Dr. T. D. Acland, of London,[9] "that upwards of 6000 persons have been inoculated with the virus of cowpox and that the far greater part of them has since been inoculated with that of smallpox, and exposed to its infection in every rational way that could be desired, but without effect." Jenner's statement is supported by the evidence of Waterhouse previously quoted[10]; and of Dr. James Smith, attending physician to the County Almshouse, Baltimore, who published in the *Telegraph,* a daily paper of Baltimore, for December 3 and 5, 1801, full accounts of the cases vaccinated publicly by him in the almshouse, and open for inspection by physicians. "All of them were freely exposed to the smallpox by inoculation and also in the natural way without exhibiting any response."[11]

Moreover, an Italian physician, Dr. Valli, who in 1803 went from Constantinople to study the plague, upon the sole security of having been vaccinated,inserted into his own hand a mixture of pestilential and variolous virus

[9]Acland, T. D., "Vaccination and Common Sense," republished from the British Medical Journal, in Bulletin 4, Vol. ii, Vermont State Board of Health, 1902.

[10]St. L. M. R., December 22, 1906, p. 586.

[11]Cordell. The Medical Annals of Maryland, p. 49.

and felt no ill effects therefrom.[12] "McPherson performed the same experiment [direct inoculation of recently vaccinated persons with variolous matter] in India."[13] Other similar experiences have taken place in Europe.

It is further to be noted that the monkey reacts to both vaccination and smallpox exactly like the human being. The test of inoculation has been made on the monkey with the same results as in the human being, and it can be readily repeated.

II. *The Test of Comparative Periods.*—According to the investigation of the Epidemiological Society[14], in England in the fifty years preceding the introduction of vaccination—1750 to 1800— there were 96 deaths from smallpox out of every 1000 deaths; in the fifty years following the discovery and gradual

[12]In a communication from Dr. De Carro, of Vienna, to Dr. Jenner, published by the latter in the Times, under date, October, 1803, reprinted in the Times for 1903, and quoted in the Brit. Med. Journ., for October 31, 1903, p. 1158. This, together with other statements touching vaccination was made the subject of a proces verbal by Dr. Auban, of Constantinople, and forwarded by him to Dr. de Carro, through the French Ambassador at Vienna.

[13]Duncan Stewart. Report of Smallpox in Calcutta in 1884. Ref. Charles L. Webster, M. D. Cleveland Journ. of Med., March, 1901, p. 131. A prophetic article read to the Cleveland Medical Society shortly before the substitution of isolation and other sanitary measures for vaccination by the health officer of Cleveland during the epidemic of 1900—1902, the disastrous result of which experiment promptly converted the antivaccinationist health officer.

[14]Aitken, Sir Wm., M. D., F.R.S.—Science and Practice of Medicine, 7th Ed. London. 1880. Vol. i, p. 479.

prevalence of vaccination—1800 to 1850—notwithstanding that the first compulsory vaccination law in England dates from 1853, and is therefore outside that period, the deaths from smallpox, fell to 35 per 1000. In various German States the corresponding rates showed a drop from 66.5 to 7.26 for the same period.

Art and literature teem with evidences of the frightful mortality and disfigurement due to smallpox prior to the "invention" of vaccination.

III. *"The effect of vaccination on particular groups of persons exposed to the contagion of smallpox under more or less similar conditions."*—On this Dr. T. D. Acland, of London,[15] remarks, "There cannot be any better illustration than the experience of the staffs of the various smallpox hospitals.

"In Highgate Smallpox Hospital, from 1836 to 1896—a period of no less than 60 years—1 case of smallpox and 1 only, occurred among the hospital staff, and he was the gardener, least exposed to infection, but not revaccinated." The experience of the Sheffield, Warrington, Homerton, Fulham Smallpox Hospitals, the Mile End Infirmary, and of the smallpox hospitals of the Metropolitan Asylums Board, as well as of their hospital ships, is further cited to bear out the deductions arrived at.

[15]Acland, T. D., M.D.—An Address on Vaccination and Common Sense. Brit. Med. Journ., Ref. Bull. 4, Vol. ii, Vermont State Board of Health, June, 1902.

The following is from a personal communication from Dr. R. L. Thompson, of St. Louis University:

"During the epidemic in Boston (1900-3) when several thousands of people suffered from variola, none of the attendant physicians, none of the hospital officials, none of the helpers about the hospital, contracted smallpox, and the only protection these individuals had was the fact that they had recently been vaccinated. From the nature of their employment, isolation and quarantine could have had no bearing in their case. Moreover, the four-year-old daughter of the superintendent played about the wards among the infected patients without contracting the disease. She, as well as the others mentioned who were officially brought into contact with the patients, was vaccinated many times during the course of the epidemic."

IV. *The Experience from Epidemics.*— The notable epidemic periods in the latter half of the Nineteenth Century were the early fifties, the middle sixties, the early seventies and eighties, and the middle eighties. Smallpox is undoubtedly more virulent in some epidemics than in others. In some, therefore, there will be a greater proportion of cases and deaths than in others, and this increased virulence will of course show itself, more or less, in all localities where smallpox is found, and in both classes, vaccinated and unvaccinated, since no one asserts that vaccination is a perfect "preventive" for more than four to six years,

though its modifying influence is probably never wholly exhausted.

A pamphlet relating to vaccination and smallpox issued by the Imperial Board of Health for Berlin[16] for the World's Fair in St. Louis, publishes the mortality statistics of ten cities, Berlin, Hamburg, Breslau, Munich, Dresden, London, Paris, Vienna, St. Petersburg and Suburbs (since 1878 only—no prior statistics existent), and Prague and Suburbs, from 1861 to 1902, inclusive. This period, it will be seen, includes all the epidemic periods mentioned above. The most malignant of these epidemic periods was that of the early seventies, and the accompanying Table A, which we have constructed from data given in the pamphlet, shows that in all the unvaccinated cities the mortality per 100,000 people in the highest year in the epidemic for each city varies between a minimum of 326.6 (Dresden) and a maximum of 1075.5 (Hamburg); while London, which was—and is yet—protected only by "vaccination (once for all) ordered by law, but imperfectly carried out," though containing perhaps a more densely crowded and insanitarily lodged poor population than any other city on the world, showed a mortality of but 242.2 per 100,000 people; and Munich, in the same condition as regards vaccination, showed only 89.0.

[16]German Empire. Vaccination Law of April 8, 174, Berlin, 1904.

TABLE A.

Death rates from smallpox per 100,000 people during the highest year of the epidemic of 1870-2, respectively in ten cities—two partially protected by vaccination in infancy only (though imperfectly carried out), eight entirely unprotected by general vaccination.

No General Vaccination								Partial Vacci.	
Prague	Vienna	St. Petersburg	Paris	Breslau	Berlin	Dresden	Hamburg	Munich	London
1872	1872		1870	1871	1871	1871	1871	1871	1871
396.5	526.9	No statistics	521.2	367.3	632.6	326.6	1075.5	89.0	242.2

Note.—Compare also with the foregoing figures, the smallpox mortality during this period of the German Army (compulsorily vaccinated) which in 1871 reached a maximum mortality of 30.5 per 100,000, while the German civil population, which had no compulsory vaccination, suffered a mortality of 262.4.

From an editorial article in the *Times*[17] summarizing the Report for 1904-5 of the Medical Department of the Local Government Board (England) we learn that in the Union of Dewsbury, England, there have been yearly serious outbreaks of smallpox from 1892 to 1904. Dr. Wheaton, who was sent down by the Local Government Board to report in September, 1904, "found that the epidemic was fast passing beyond the control of the sanitary authorities, and that the Dewsbury guardians [the normal vaccinating authority] were abstaining from doing anything to help them. The town smallpox hospital was over full, and its administration completely disorganized. . . The general state of the locality is described as being 'altogether pitiable.'. . . . At length,

[17]Times, September 22, 1906. Reproduced in full in the Monthly Homoeopathic Review (London) for December 1, 1906.

finding the Guardians utterly impracticable, the Local Government Board conferred the necessary powers upon the Dewsbury Town Council, by whose prompt action as a vaccination authority the plague was shortly stayed."

It may not be out of place to note here that in this same Dewsbury epidemic, "Dr. Wheaton asked a father if he were not convinced of the protection afforded by vaccination by seeing the immunity of the medical men; and the man replied that the medical men were 'protected by a charm with which they would not part.'" Whence it follows that a belief in the inefficacy of vaccination must, according to Mr. Hubbard's method of reasoning, be placed in the same category as a belief in charms.

In the Boston Epidemic of 1900-3 to which reference has already been made, Dr. R. L. Thompson informs us (*l. c.*) that "although several thousands of people suffered from variola, all the cases occurred in people who were either unvaccinated or, if vaccinated in infancy, had not been revaccinated at all or at least for many years. The nearest approach to an exception to this statement was the occurrence of variola in one person who had been apparently successfully vaccinated twelve years previously."

V. *Comparison of Vaccinated and Unvaccinated Communities.*—Similar results follow on a comparison of statistics between vaccinated and unvaccinated communities. Acland (*l. c.*) cites as examples Dewsbury, Leicester, Gloucester, Sheffield, Warrington, Glasgow, London, and Middlesburgh. The German

pamphlet already referred to publishes, as before stated, a chart of the smallpox mortalities of ten cities from 1861 to 1902 inclusive. It will be noted that this term includes several of the epidemic periods mentioned above. From this chart we have constructed the series of tables given in this article.

Table B shows the highest and lowest death rates, respectively, reached in any one year in each of these ten cities from 1861 to 1873 inclusive, a period of 13 years; also the mean annual mortality of each of these cities during the said period of 13 years. Of the ten cities all were unprotected by general vaccination except Munich, which, prior to 1874, had vaccination once for all; and London, which also had "vaccination (once for all) ordered by law but imperfectly carried out," (as vaccination, in spite of any laws, must ever be in a city of the vastness of London, with its densely herded poor population in the lower quarters).

TABLE B.

Showing the highest and lowest smallpox mortalities in any one year in each of ten cities, eight without vaccination, two with partial vaccination, for the thirteen years from 1861 to 1873 inclusive.

	No General Vaccination.								Partial Vacci.	
	Prague	Vienna	St. Petersburg	Paris	Breslau	Berlin	Dresden	Hamburg	Munich	London
*First line - Highest mortality in 1 year	*395.5	526.9	No	521.2	367.3	632.6	326.6	1075.5	89.0	224,2
†Second line—Lowest mortality in 1 year	† 15.0	22.1	statis-	0.9	2.7	1.6	0.0	0.0	0.6	1.7
§Third line—Mean mortality in 13 years	§ 64.9	85.0	tics	61.5	85.9	83.5	55.9	114.4	14.2	44.3

Note. Not all these cities have complete records for the 13 years. In those that fall short of thirteen

years' records, the means in this table have been calculated as though the missing years had no mortality at all from smallpox, thus giving the greatest possible advantage in the statistics to the argument against vaccination. This has been done to avoid the charge that (if the mean of those years only in which records were kept had been given) an unfair advantage accrued to the argument for vaccination, inasmuch as the mean would have been lowered had the missing years been forthcoming. If the actual mean of those cities that have not complete records were taken for those years only for which records are forthcoming, they would be as follows:

Prague (9 years; 1865-1873) 93.8 in place of 64.9.
Vienna (9 years; 1865-1873) 122.6 in place of 85.0.
Paris (8 years; 1866-1873) 100.0 in place of 61.5.
Breslau (12 years; 1862-1873) 93.1 in place of 85.9.
Munich (7 years; 1867-1873) 26.4 in place of 14.2.

But the epidemic of the early seventies led to the promulgation of the German law calling for compulsory vaccination *and revaccination,* which came into operation in 1874. A consideration of the aforesaid chart from 1874 to 1902 inclusive, shows (Table C) that in all the five German cities protected by vaccination and revaccination the mortality from smallpox per 100,000 people fell from a mean prior to vaccination varying between 55.9 and 114.4 (Munich, partially protected, 14.2) to *under* 1 *per* 100,000 *in all cases;* while the non German unvaccinated cities, Prague, Vienna, and Paris, remained at a mean of 84.4, 40.8, and 13.2 respectively (or 14.2, if we strike the mean, as we should, for 27 years only). St. Petersburg (unvaccinated), the records of which are available only from 1878—1901, shows a mean mortality of 22.6 (or really 26.1, if we strike the mean, as we should, for 25 years only). London, partially vaccinated

but with increasing efficiency, falls from 44.3 to 12.2.

Further, the highest maximum mortality of any city in one year for the completely vaccinated cities is 10.30 (Munich), and for incompletely vaccinated London, 71.0, as against a lowest maximum mortality for the unvaccinated cities (Paris) during the same period, of 103.2.

TABLE C.

Showing the highest and lowest smallpox mortalities in any one year in each of ten cities, four without general vaccination, five with vaccination and revaccination, and one with partial vaccination; also the mean mortality for the twenty-nine years from 1874 to 1902 inclusive.

No General Vaccination				Vaccination & Revaccination					Partial Vacci.
Prague	Vienna	St. Petersburg	Paris	Breslau	Berlin	Dresden	Hamburg	Munich	London
*395.8	179.6	134.6	103 2	8.4	4.7	4.2	3.6	10.30	71.0
† 0.0	0.0	3.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0
§ 84.4	40 8	22,6	13.2	0.6	0 7	0.7	0.4	0.8	12.2

*First line—Highest mortality in 1 year
†Second line—Lowest mortality in 1 year
§Third line—Mean mortality for 29 years

Note: For reasons stated above in relation to Table B we have given the mean of all cities as though the records were forthcoming for 29 years. As a matter of fact St. Petersburg has records for only 25 years and Paris only 27 years, so that their mean mortalities should read 26.1 and 14.2, respectively, according to the number of years computed for.

Now, if instead of cities we take entire countries, we find (*l. c.*) the result still the same. Prussia and Austria stood on the same footing as regards compulsory vaccination up to the epidemic of the seventies, and the mean death rates from smallpox per 100,000 people

were both very high, the figures for 1847 to 1873 inclusive, being as shown in Table D.

TABLE D.

Showing the highest and lowest smallpox mortalities in any one year in Prussia and Austria, respectively, before the introduction of compulsory vaccination and revaccination in Prussia; also the mean mortalities for twenty-seven years, from 1847 to 1873.

	No General Vaccination.	
	Prussia	Austria
Highest mortality in a year.....	262.4	314.7
Lowest mortality in a year.....	7.5	11.1
Mean mortality for 27 years....	42.1	44.0

In 1874 compulsory vaccination and revaccination came into force in Prussia, while Austria remained, and still remains, without compulsory vaccination (although since 1891 the Government has done all in its power to favor vaccination). Compare, then, the following death rates from smallpox per 100,000, (Table E) in these same countries between 1874 and 1901 inclusive.

TABLE E.

Showing the highest and lowest smallpox mortalities in any one year in Prussia and Austria, respectively, after the introduction of compulsory vaccination and revaccination in Prussia; also the mean mortalities for twenty-eight years, from 1874 to 1901 inclusive.

	Vaccination & Revaccination	No General Vaccination
	Prussia	Austria
Highest mortality in 1 year.....	9.5	174.3
Lowest mortality in 1 year.....	0.0	0.2
Mean mortality for 28 years....	1.3	44.1

Or, again, take Belgium and Bavaria (Table

F.) In Belgium there has never been compulsory vaccination. In Bavaria there was vaccination in infancy only from 1851 to 1873.

TABLE F.

Showing the highest and lowest mortality from smallpox in any one year in Bavaria, protected by vaccination in infancy only, and in Belgium, with no general vaccination, also the mean for twenty-three years, for the period 1851-1873 inclusive, prior to the introduction of compulsory vaccination and revaccination into Bavaria.

	Vaccination in Infancy only Bavaria	No General Vaccination Belgium
Highest mortality in 1 year.....	104.5	416.8
Lowest mortality in 1 year.....	1.6	9.7
Mean mortality for 23 years....	15.6	48.5

Note. For 1861-2-3, no Belgian statistics are available, so that Belgium really gets the advantage of 3 years' mortality reckoned at 0.0, when, judging from other years, the mortality was probably not inconsiderable. Taking Belgium on a 20 years' basis, which is all that the figures are forthcoming for, the mean mortality would be 55.8 instead of 48.5.

But in 1874, Bavaria, being a German State, came under the operation of the German law ordering compulsory vaccination and revaccination, while Belgium remained, as before, without general vaccination (Table G.)

TABLE G.

Showing the highest and lowest mortality from smallpox in any one year, and the mean for 28 years, 1874-1901, after the introduction of compulsory vaccination and revaccination into Bavaria.

	Vaccination & Revaccination Bavaria	No General Vaccination Belgium
Highest mortality in 1 year.....	4.7	74.9
Lowest mortality in 1 year.....	0.0	2.0
Mean for 28 years.....	0.6	25.3

These comparisons could be still further extended by showing that a similar disproportion of deaths from smallpox existed as between the civil (unprotected) and the military (protected) population of Prussia prior to the vaccination law of 1874; also as between the German (Prussian) army (protected) and the Austrian and French Armies (protected by vaccination only since 1886, and 1888 respectively) in the thirty-four years, 1867-1900.

Now, what do these facts and figures show?

(1) That the remarkably contagious poison of smallpox has failed in at least many hundreds of cases to convey contagion, even when actually inoculated, let alone from such close proximity as is ordinarily sufficient to persons who have been recently successfully vaccinated. So far as we are aware there is no evidence forthcoming of a single case to the contrary.

(2) That the ordinary mortality from smallpox was reduced to less than half in England, and to less than one-ninth in Germany, in the fifty years following the "invention" of vaccination.

(3) That certain groups of persons who come most frequently into direct contact with smallpox hardly ever are themselves attacked with the disease, and that they nearly all believe in and practise vaccination on themselves, while the very nature of their duties makes the substitution of isolation, etc., impossible for them.

(4) That in epidemics of a malignant type,

while the percentage of deaths among the "vaccinated" (including in the term those who have been vaccinated only once, in infancy, years ago) as well as among the unvaccinated may be greater than at other times, the ratio between such deaths among the vaccinated and unvaccinated, respectively, in any given epidemic remains invariably very much lower for the vaccinated than for the unvaccinated.

(5) There is in cities, in countries, and in large bodies such as armies well vaccinated and revaccinated, an enormously smaller proportion of deaths than in non vaccinated cities, countries, and armies, under similar conditions.

When we add to these considerations that, so far as we have been able to ascertain, there is no solitary instance of an epidemic in which the mortality percentage has not been very much lower among the "vaccinated" than among the unvaccinated; that there is no solitary instance of a community in which the annual death rate from smallpox is not very enormously smaller among the "vaccinated" than among the unvaccinated; it seems to us that sequence and consequence are pretty nearly identical in this matter.

There is, of course, one method by which the whole of the arguments founded on these observations can be at once annihilated; it is a method, as we have seen, that is not unfamiliar to Mr. Hubbard. It consists in asserting that the thousands of men employed in gathering the data for these observations and statistics, the men who classified and the authorities who

published them, as well as the writers who have made use of them, have, one or perhaps all, "lied."

But then that is neither demonstration nor argument.

Mr. Hubbard continues:

Those who have been vaccinated occasionally have smallpox,

This loosely worded statement is susceptible of two interpretations: Either (*a*) some persons out of all those who have been vaccinated have smallpox; or (*b*) all those who have been vaccinated have smallpox (as the *Philistine* is published) "every little while." The latter interpretation is of course preposterous. The former is (temporarily only) conceded.

[But we would remark that all reported cases, so far as we are aware, of deaths from smallpox in "vaccinated" persons show either (*a*) that the persons had not been successfully vaccinated within a considerable number of years—rightly explained by the statements referred to in Mr. Hubbard's next remark; or (*b*) that if a recent attempt at vaccination had been made, it was after the patient had been actually infected with small pox and was sickening with (incubating) the disease, a fact that can be established by the number of days that elapsed between the attempted vaccination and the first manifestation of smallpox.]

Then we say that vaccination "never took" or it "had run out."

Conceded.

Two terms without meaning and without sense, save in the dusky feline gibberish.

Without pausing to inquire what Mr. Hubbard means by the "dusky feline gibberish," we would state that the expressions "never took" and "it had run out" have a very definite meaning and sense, even though they may be unintelligible to Mr. Hubbard.

1. "No take."—When *any* specific virus obtains entrance, or particularly is inoculated, into the human body or any other susceptible subject it may (*a*) obtain a lodgment and go through its life processes (if an organism) or exercise its chemical activity (if an enzyme) at the expense of its environment, producing thereby in the latter certain physiological or pathological changes—pathology is merely physiology operating abnormally— in which case it is said "to take"; or it may (*b*) fail to adapt itself to its environment and thus die out without effecting the aforesaid changes, in which case it does "not take." One of those changes effected in an organism by the "taking" of certain viruses is the exhaustion, wholly or partially, for a longer or shorter period of time, of the susceptibility offered by the organism for fresh inoculations to "take" —in other words the production of a complete or partial, a permanent or temporary immunity to that particular virus.

(2). "It had run out."—When this insusceptibility of the organism to further successful inoculation (immunity) expires, it is said to have "run out." This happens in shorter or longer periods of time for different diseases; in the case of vaccination against smallpox, it is admittedly one of comparatively short dura-

tion, usually not more than seven years or so. Hence, to be evidence against the assertion that vaccination does confer temporary immunity to smallpox, it must be shown not merely that the occasional "vaccinated" persons who have contracted smallpox have been subjected to the operation of vaccination, but that it "took," as evidenced by certain definite signs,[18] and also that it was performed within say six or seven years, by which time the insusceptibility to the activity of the poison is known to "run out."

It will thus be seen that there is no more "dusky feline gibberish" about the use of the terms "never took" and "it had run out" than when we assert that we "never took" a lease of a house, or that the lease that we did take "had run out."

Now, we have dealt with the isolated proposition, "The immunity is an assumption absolutely unproved." This proposition was immediately followed by the other (grammatically) isolated proposition, consisting of two parts, viz., (1) "Those who have been vaccinated occasionally have smallpox;" (2) "and

[18] "Many persons think that because they have a scar resulting from vaccination they are immune to smallpox. . . . The scar may be only the result of an infection following vaccination and contain none of the characteristic pits of a successful vaccination, hence vaccination scars should be carefully examined, and unless they contain the true pits resulting from the vaccine vesicle they can be said to be of no value in protecting against smallpox. The size, that is, the area which a scar occupies, bears no relation to the degree of immunity obtained unless the scar is characteristic.—Dr. J. D. Mars, in N. Y. State Journ. of Med., November, 1906, p. 424.

then we say the vaccination 'never took' or 'it had run out,' two terms," etc. We have just dealt with this in its two parts as an isolated proposition; but unless it is intended to be connected logically with the preceding one it is absolutely irrelevant to Mr. Hubbard's main thesis, viz., that vaccination is useless as a preventive of smallpox.

Assuming it as intended to be relevant thereto, the only conceivable connection may be expressed in the following hypothetical syllogism.

If vaccination conferred immunity no vaccinated person could have smallpox.
But some vaccinated persons have smallpox
Therefore vaccination does not confer immunity

Here we must distinguish. The antecedent portion of the major, "if vaccination conferred immunity," must mean either "conferred immunity in some cases," or "conferred immunity in all cases". If the first, then the consequent, viz., that "no vaccinated person could have smallpox" does not follow, and the premise is denied. If the latter (and indeed in either case), the conclusion must be particular, (since one of the premises is particular) and must read "Therefore vaccination does not confer immunity *in all cases,*" which does not prove that vaccination does not confer immunity in any case, or even in 999 cases out of every 1000.

So far we have allowed Mr. Hubbard's minor to pass. But as a matter of fact we deny

the statement that "some 'vaccinated' persons have smallpox." To arrive at a common ground, however, we must define what constitutes a "vaccinated" person.

A person to be a "vaccinated" person, in the sense in which the term is used by medical scientists, must not merely have undergone the operation *within seven years at most,* but the result of that operation must evidence that the vesicle was actually *a specific vaccinia vesicle,* and not a traumatic infective one. This may be shown by the character of the scar, and also by Dr. Thompson's observation. No number of unsuccessful attempts at vaccination can be accepted as equivalent to a successful vaccination, because unsatisfactory lymph, an imperfect operator, or design on the part of the patient, may cause a failure in a really susceptible person. We have known a patient rub the vaccination wound with carbolic lotion as soon as the doctor had departed, and no vaccinia resulted, though a few weeks later the patient was successfully vaccinated. Further the patient must not have been incubating smallpox at the time of vaccination.

If all these conditions are fulfilled, we do not know of any case, either personally or on indisputable testimony, and *we believe that it would be impossible to produce a single case,* in which a "vaccinated" person has had smallpox. Until we are shown to be wrong on this point we deny the validity of the minor premise in this argument, and consequently we deny the conclusion that successful recent vaccination does not confer immunity in every case.

But suppose Mr. Hubbard proves his minor, that "Some [recently successfully] vaccinated persons have smallpox," logically we can only affirm therefrom that vaccination does not confer immunity in all cases. Would he assert as a corollary that in that event it is useless? Let us see where that would lead us.

Vaccination claims to prevent smallpox but does not prevent it completely, universally, and infallibly.
But a measure that claims to prevent anything but does not prevent it completely, universally, and infallibly, is useless.
Therefore vaccination is useless.

If that is sound reasoning, then so are the following:

Sanitation is a measure that claims to prevent disease (even smallpox according to Mr. Hubbard.)
But sanitation does not prevent disease completely, universally, and infallibly.
Therefore sanitation is useless,

Or again:

The block system is a measure that claims to prevent accidents on railroads.
But (just at this present time we are having almost daily evidence that) it does not prevent them completely, universally, and infallibly.
Therefore the block system is useless.

Now, the block system depends for its efficacy on one or more of three factors, the working of the signal, the compliance of the engineer, and the response of the brakes. If we try to explain that a certain accident occurring upon a railroad equipped with the block system was due, not to the uselessness of the block system, but to the fact that the signal "was not

in order," that the engineer "disregarded the signal" (on account of inattentiveness, sleepiness, drunkenness, fog, or even from being dead at his post, as has happened), or that though he saw the signal and tried to stop the train he could not, because the "brakes did not work," will Mr. Hubbard insist that these are "terms without meaning and without sense, save in the dusky feline gibberish;" or will he admit that a failure in particular instances to effect what is expected of vaccination must not necessarily be charged against vaccination as a system, until it is shown conclusively that it was not due to poor material, to improper work on the part of the operator from culpable or unavoidable reasons, or to the fact that the organism did not temporarily respond—"no take"?

Some years ago Mr. Hubbard published a picture of a skull with the legend, "What's the Use?" It may be that the appropriate significance of the picture will become apparent, even to Mr. Hubbard, if his motto should prevail in regard to vaccination.

The Jenner fallacy owes its vogue to being endorsed by the English government, thus being given a legal standing.

This is a positively startling proposition. The vogue of vaccination obtains not only in England, but in Germany and several other European countries and even in the United States, to which, we conceive, Mr. Hubbard particularly refers in his argument. To confine our remarks to the last named, it is news that because a thing is "endorsed by the Eng-

lish Government," thus "being given a legal standing", it attains a vogue in America, and especially when such vogue began at the end of the eighteenth and beginning of the nineteenth centuries. There were certain other practices and doctrines the very endorsement of which by the English government of that day, (if we dare rely on information obtained only from lecturers and books) and that but a few years previous to the discovery of vaccination, which so far from creating a "vogue" in America, led to a decided difference of opinion that resulted in this country not only not adopting those practices and doctrines, but entirely repudiating the government that endorsed them. A few years later, moreover, in 1812 (we are, alas! again dependent on information derived from lecturers and books), a similar lack of "vogue" for things endorsed by the English government also manifested itself; indeed there was quite a vigorous opposition to them—yet the vogue for vaccination has continued in this country from about that time up to the present, as Mr. Hubbard admits, and must be attributed to the endorsement of the English government! The suggestion that Germany, moreover, accords a vogue to anything because it is endorsed by the British government would have created quite a sensation if promulgated during the early phases of England's little difficulties with Oom Paul.

Next, it was fostered by the men who were paid for doing the vaccinating, and the thing that carries honors and money will be stoutly, and honestly, too, upheld, for we stand by the thing that is to our interest.

A suggestion of the possibility of interested motives is, of course, owing to the frailty of human nature, always in order. But without reverting to the trite argument that if vaccination does lessen smallpox, do not the physicians sell their financial birthright for a mess of pottage in promoting vaccination?—in other words, are they not penny wise and pound foolish?—we may ask How is it that stronger support of vaccination comes from the medical scientists than even from the practitioners, from those members of the profession in short who have nothing to gain by the practice, and who cannot even gain honor by identifying the theory with themselves? We refer to such men as Councilman, of Harvard, Howard, of Western Reserve University, Ewing, of Cornell, Flexner, director of the Rockefeller Institute, W. H. Welch, of Johns Hopkins, Hektoen, of the McCormick Institute of Infectious Diseases, Chicago, and of Rush Medical College. This list could be extended to include almost every medical scientist of repute—the exceptions are very few—in this country and in Europe. And would the fact that they are paid for vaccinating lay patients induce doctors, particularly when there is smallpox about, to vaccinate themselves and their families and each other, where there is "nothing in it," as seventy per cent. of them throughout the civilized world do, even in countries where vaccination has no legal sanction?

To indulge for once in an *argumentum ad hominem*. Though we once had a considerable vaccination practice, for over a decade we

have not practised medicine at all. We have been often revaccinated, we have had our children vaccinated, and shall have them revaccinated, and if an epidemic of smallpox were to break out in our immediate vicinity tomorrow, we should urge instant vaccination for ourselves and all around us. One swallow, it is true, does not make a summer. But we have no hesitation in asserting that that same course would be immediately and without doubt or question pursued *by 70 per cent of all the physicians with whom we are acquainted;* and in 25 of the remainder it would be carelessness, not opposition, that would lead to neglect.

Next, vaccination having been accepted and recognized by the army surgeons, it got into the textbooks and was explained and taught in the medical schools.

Now to uproot the fallacy, it was required and necessary that the books which taught it, the schools that endorsed it, and the doctors who practised it, should all admit they had blundered.

That was too much to expect and hence the fight, for it is the nature of man that he would rather protect a lie than be embarrassed by the acknowledgment of the fact that he did not know the truth.

A few pages back, Mr. Hubbard twitted the medical profession with the assertion that since forty years ago "the entire scheme of medicine, as it then existed, has been abandoned." How it is that the doctors should have been willing to "admit they had blundered" so greatly as to repudiate the entire scheme of medicine, while it was "too much to expect" that they "should all admit they had blundered" in regard to a single therapeutic measure Mr. Hubbard does not make clear.

We may, however, point to the following among many other practices and doctrines that notwithstanding that formerly the books taught them, the schools endorsed them, and the doctors practised them, nevertheless passed out of the practice of medicine when better measures were introduced: The routine use of bleeding, cupping, and leeching, the withholding of water in fevers, the doctrine of "laudable pus," the rule of primary amputations in certain gunshot wounds, etc.

Vaccination has not as much in its favor as the belief in witches, nor is it as reasonable, for witchcraft has the endorsement of Scripture.

Already commented on.

The degree of M. D. is given on the pupil's proficiency in memorizing things told him by lecturers and printed in books. These lecturers get their knowledge from books and the men who wrote the books got their information from lecturers and books.

Whence did Mr. Hubbard get his remarkably inaccurate information concerning the data of vaccination if not from "lecturers and books?" From his own personal observation? On the other hand, Mr. Hubbard must be talking of the degree of M. D. of "forty years ago," though he says "is given," not "was given." A brief inspection of the curriculum of any modern medical school would quickly demonstrate that the student is no longer merely told things,he is shown them; so that the information gained"from lecturers and books" is in these days entirely supplanted where possible, and where not supplanted is reinforced, by practical work in laboratories and

in the clinics, where he is shown what to observe, how to observe it, what conclusions may be legitimately drawn from his observations, and how the validity of his conclusions may and will be tested.

As to vaccination in particular, facts drawn from observation instead of from an historical account of what has happened in special epidemics, are hard to find for object lessons, for the simple reason that during the ten or eleven decades in which vaccination has been more or less operative smallpox has dwindled down from a never absent and almost universally distributed pestilence to such an ebb that in most places it is hardly ever to be found in sufficient quantity for purposes of study. When a sporadic case or two does occur, the spread is usually checked by vaccination before it would be possible for any appreciable number of students to study conditions. In the few instances in the last five decades where laxity in regard to vaccination (as we think) has enabled smallpox to become epidemic, the epidemic has invariably been so modified that it is equally difficult to improve the occasion as an object lesson. The experience of those few, however, who have been enabled to study any of the isolated epidemics which have occurred in very incompletely vaccinated localities has almost invariably converted them to a belief in vaccination, or strengthened their previous belief. Only an extensive epidemic and such events as the stamping out of the disease by vaccination in Porto Rico and the Philippines can afford data for an object lesson in the

protective effect of vaccination, and that unfortunately is limited to a few, save through "lecturers and books."

Very rarely is any new or commonsense idea advocated in colleges, because to do so is to lose caste. New ideas are forced in by barbarians who have no reputations to lose, and then are adopted by the school-men when they have to.

For instance, no doubt, the germ theory by that barbarian, Lister; the mosquito theory of yellow fever by the barbarians Reed, Agramonte, Carroll, Lazear, Guiteras, etc.; not to mention more recondite matters, such as the plasmodium malariæ, trypanosomiasis, the *Spirochaete pallida,* etc.

Any pupil who introduces his own ideas in opposition to the text books is refused his diploma.

No man is fit to become a scientific investigator or a practiser of a skilled craft, until he has a good average knowledge of what is known, believed, or practised in science or the craft. The M. D. degree is simply the portal, and the diploma is merely a means of making sure that before he begins to improve on existing knowledge or practice he shall know what existing and previous knowledge and practice are and have been. How many wonderful new ideas "in opposition to the text books" turn out on investigation to be ignorant resurrections of what has long before been proclaimed, investigated, and discarded as disproved!

And any man who does not have his diploma is not allowed by the State to practise medicine.

Taking the word diploma as meaning either

the "degree of M. D.," or a State license to practise, or both, according to the requirements of the respective States, this is conceded. Its justification has been already given.

So you see how the tendency is to make ignorance and superstition perpetual in medicine exactly the same as in theology.

A conclusion unsupported by the premises as shown above.

To the average mind sequence is proof. For instance: Plug hats are worn in all civilized countries. In barbaric countries there are no plug hats. Therefore it is impossible to have civilization without plug hats.

This proposition is willingly conceded. It is to be regretted that Mr. Hubbard overlooked it in writing his article. Had he not done so, we might have been spared such reasoning as that

The belief that cowpox confers immunity to smallpox was prevalent among the ignorant peasantry of a superstitious age.
The belief that crosseyed persons and hunchbacks are immune to smallpox was also prevalent among the same people in the same age.
Therefore the belief that cowpox confers immunity to smallpox rests on no better basis than the belief that the crosseyed and hunchbacks are immune to smallpox.

We shall cite more instances of this fallacy from Mr. Hubbard, by and by.

Tuberculosis kills one person out of seven; and between the ages of fifteen and forty-five, one-third of all deaths in America are caused by consumption. Out of twelve hundred deaths but one is caused by smallpox.

Irrelevant, but, according to a communication from the surgeon-general U. S. Public

Health and Marine Hospital Service, dated December 29, 1906, approximately correct as regards the first two statements[19]. As regards the last, "the figures for the period embracing the years 1900, 1901, 1902, 1903, and 1904, show for the Census registration area 1 death from smallpox in about 448 deaths from all causes" (*ibid*).

Yet there are years when smallpox is much more frequent than in others.

Conceded. This is true of all epidemic diseases. Tuberculosis, though a communicable disease, is not an epidemic disease, wherefore the before mentioned comparison is irrelevant.

For instance: In 1871 there were over five thousand cases of smallpox in the German Army, and in 1873 less than three hundred. Why this is, no man can say, but since vaccination was adopted in the German Army many years before, vaccination had nothing to do either with the epidemic or its disappearance, yet it was exactly upon such an unguessed phenomenon that Jenner secured his reputation.

In the second half year of 1870 and the whole of 1871 (these figures cannot be segregated in the Berlin Health Board's statistics) there were in the (vaccinated) German Army in every 100,000 men, 1229.7 cases of smallpox. The *deaths,* however, numbered in the same period, only 58.3 per 100,000. In the civil population of Prussia with no general vaccination during the same period the *deaths* from smallpox amounted to 505.6 per 100,000. We

[19]Actual figures: "Tuberculosis in all forms" (not consumption, i. e., pulmonary tuberculosis,only) one death in about 8.5, from 1900 to 1904 inclusive; between 15 and 44, "tuberculosis in all forms," one death in 3.2.

have no statement of the number of cases available. Mr. Hubbard is at liberty to take his choice of conclusions, viz., either that the number of cases per 100,000 civil population without vaccination must have been enormously in excess of those in the vaccinated military population, or that the death tribute paid by the mainly unvaccinated must have exceeded that of the vaccinated by a veritable holocaust. (There is, of course, the old stand-by that he prefers to believe the makers of the statistics lied.)

We have already inferentially explained why there was such a much greater number of deaths, and consequently of cases, in the German Army in 1871 than in 1873, viz., because there was prevailing more or less in Europe at that time an epidemic of a malignant type, so that *all* ratios were increased. The comparison between the small mortality among the vaccinated army, and the enormous mortality among the unvaccinated civilians bears out *pro rata* our statement that "the ratio between such deaths among the vaccinated and unvaccinated, respectively, in any given epidemic remains invariably very much lower for the vaccinated than for the unvaccinated."

The last assertion is denied.

The danger of having smallpox is infinitesimal where people pay proper attention to sanitation:

Smallpox is a disease naturally most fatal to children. This was so before the introduction of general vaccination and is so now among the unvaccinated. Among the vaccinated, however, the position has become re-

versed, and the diminution in the death rate among the vaccinated has taken place for the most part among children. Upon this fact Acland (*l. c.*) remarks,

"If it were due to sanitation the same beneficent results ought to be shown in the death rate from other diseases which are rightly considered as infantile disorders. But this is not the case. On the contrary,although the share of smallpox mortality borne by children (under five years of age) diminished greatly [in England] between 1851 and 1880, during which years vaccination was made compulsory, there is no corresponding diminution in the share of the death rate in children of the same age from other infantile disorders, such as measles, scarlet fever, diphtheria ,etc."

Acland gives the figures in this matter,as calculated by McVail,from pp. 112-114 of the Registrar-General's Supplement to the Forty-fifth Annual Report, 1871-1880.

The explanation of this lies in the fact that among vaccinated children full protection is in force, while among adults who have not been recently vaccinated the protection has "run out."

At the time of the Boston epidemic before referred to, Boston was considered one of the best sanitated cities in the United States. Since sanitation would necessarily benefit vaccinated and unvaccinated alike, it is hard, on Mr. Hubbard's assumption, to understand why, as Thompson asserts was the case (page 37), "all the cases occurred in people who were either unvaccinated, or, if vaccinated in infancy, had not been revaccinated at all or at least for many years."

Finally, the city of Cleveland[20] had a severe epidemic of smallpox in the winter of 1900-01, and the spring of 1901. In May, 1901, Buffalo (which is near East Aurora, N. Y.) threatened to quarantine Cleveland, and vigorous measures including vaccination were at once taken, so that by the end of July smallpox was all but stamped out. On July 20, 1901, Dr. Martin Friedrich was appointed health officer. He "announced that vaccination would be abandoned thérafter by his department, and that reliance would be placed on general sanitation and disinfection." "This announcement [was 'to show to the world what could be done in a case of a smallpox epidemic with disinfection with formaldehyde,' and] was made when there was practically no smallpox in the city of Cleveland, at a period of the year when, as a rule, outbreaks of smallpox are not looked for, and at a time following a long epidemic of smallpox, during which over 2,000 persons had been attacked by the disease and several thousand vaccinated." On July 29, 1901, vaccination was entirely abandoned, thorough and complete formaldehyde disinfection, a crusade against dirt and all nuisances, and vigorous paving and sewerage were instituted, and quarantine was as vigorously established as possible. The smallpox continued to dwindle down until it had practically disappeared, the last case developing in the city on August 23, 1901. Dr. Friedrich claimed the credit for formaldehyde and sanitation. In 1902, however, a fresh

[20]Ill. State Board of Health. Bull. vol. ii. No. 7, November-December, 1906, p. 275.

epidemic broke out of such severity that from June 1st to July 25th Cleveland "had far more cases of smallpox than *any other two cities in the United States,* including St. Louis, New York, Jersey City, and Philadelphia, in all of which the disease had been far more prevalent during the past year." In September, 1902, Dr. Friedrich manfully recanted (not so praiseworthy an act, we fear, in Mr. Hubbard's opinion, as it would have been had he recanted from, instead of to, vaccination) and resumed vaccination with vigor. The figures tell the rest of the story: Cleveland (1902) smallpox cases 1298, smallpox deaths 224; (1903), 106 cases, 22 deaths; (1904) 42 cases, *no* deaths; (1905) *no* cases.

When we began this article we promised to deal with it in its entirety, paragraph by paragraph. It has proved, however, so lengthy a task, that in pity to our readers we propose for the rest of it to comment only on those points that have not hitherto been dealt with, directly or by inference, and which we do not concede. Our object in dealing with this matter at all has been not with any idea of converting Mr. Hubbard or any of his fellow antivaccinationists, but simply to point out to those of our brethren who may have had no opportunity to look into the details of this matter for themselves, that a fluent pen and an easy dogmaticism are not necessarily synonymous with infallibility. We are not casting any reflection on Mr. Hubbard's sincerity, but neither do we understand that Mr. Hubbard intended to cast any reflection on the sincerity of the "unthink-

ing, unscientific country wench" whose "chance remark" led to "Dr. Jenner's 'discovery.'" Even Dr. Jenner's sincerity is impeached by Mr. Hubbard, not for any lack of moral principle on his part, but simply because he is assumed to have got himself into a dilemma, and consequently, and apparently naturally—it would have been "too much to expect" anything else—and indeed, almost properly, since "it is the nature of man" in a fix, he just had to lie himself out of it.

But the risks from vaccination are very considerable.

This is denied, for reasons which will appear in due course.

To poison the body of a healthy child with pus taken from the sores on a sick cow in order that the child shall not catch smallpox, admitting for the sake of argument that vaccination causes immunity, is a very foolish operation.

In vaccination not "pus," but lymph, is used, a vastly different thing, Jenner particularly cautioned against the use of pus.[21] He wrote: "Take the virus before the efflorescence [which indicates the conversion of a vesicle containing lymph into a pustule containing pus] appears." And again: "I don't care what British laws the Americans discard [Jenner was corresponding in 1800 with Waterhouse], so that they stick to this—never to take the virus from a vaccine pustule for the purpose of in-

[21]Wm. W. Welch. The Work of Jenner, etc., quoted above from American Medicine, June 7, 1902, p. 963.

oculation after the efflorescence is formed around it. I wish this efflorescence to be considered as a sacred boundary over which the lancet should never pass." "This advice," says Dr. Welch, "was so constantly given by Jenner, and was deemed of so great importance by him, that it became known everywhere as the 'Golden Rule' of vaccination." During the period of arm to arm vaccination, pus was undoubtedly taken at times, and to that cause must be attributed a considerable proportion of such serious results as did occur. The instructions with regard to not taking pus, but only pure lymph, for vaccine, are as precise and definite as the instructions to a railroad engineer for avoiding collisions. If either set is disregarded serious results may follow. Are we then to give up railroad travelling?

There is no general practitioner but who can recall cases where vaccination has caused dangerous illness and occasionally death.

A universal negative proposition that the logical faculty, which Mr. Hubbard claims (p. 58) in his reference to "sequence and proof" and "plug hats," should have prevented him from attempting to establish. We ourselves have seen and done many vaccinations as a general practitioner and we have *never* seen a single instance of "serious illness" following on vaccination under such circumstances as to suggest a caustive relation between the two; which—unless we lie—is sufficient to upset Mr. Hubbard's universal negative proposition.

More evidence on this point will be forthcoming when we come to detail.

Loss of an arm thru (sic) bloodpoisoning is not so infrequent but that all doctors know of such.

"Loss of an arm through bloodpoisoning" is certainly so infrequent that by no means all doctors know of such, even taking the expression, as stated, in its broadest sense, i. e., without any reference to vaccination; and as the greater includes the less, it must be still more infrequent when the expression is limited to loss of an arm through blood poisoning consequent on vaccination. Even in the former case we feel sure that not one doctor in five, to make the largest possible allowance, has personal cognizance of a single case of "loss of an arm through bloodpoisoning" from all causes put together. And when the blood poisoning is limited to that consequent on vaccination, as it must be to be relative to the subject in hand, we feel well on the safe side when we say that not one doctor in five thousand has personal cognizance of such a case.

With a view to ascertaining the experience of someone intimately associated with vaccination as it is practised today, we have asked Dr. H. J. Scherck, for the past four years City Dispensary Physician for St. Louis, what his experience has been, and he informs us that though he has supervised many thousands of vaccinations in that period, not a single untoward accident of vaccination has come to his knowledge during that time. Since September 1, 1906, the beginning of the school year,

5,933 primary vaccinations and 243 revaccinations have been done in the Catholic parochial, German Lutheran, and public schools of St. Louis. The official report has just been handed in, and *not one single complaint of untoward results has been made,* although the percentage of "takes" has been over 95 in primary cases.

As Dr. Scherck might, in Mr. Hubbard's opinion, be "lying," we asked him to refer us to some one else of wide experience in this matter. Thereupon he referred us to Dr. Warren G. Priest, who has been connected with the vaccination service of the Health Department of St. Louis for upwards of twenty years. Dr. Priest's statement is as follows:

"For twenty years I have been intimately associated with the health department of this city, have vaccinated personally tens of thousands of men, women, and children, have conducted the vaccination service of the city in times of epidemic invasion of smallpox, and have *never known a single incident out of at least* 150,000 *persons vaccinated by the city physicians, in which any untoward result following vacination has ever manifested itself* [italics ours.] Occupying a position of civic responsibility, if any evil result had followed, for instance the loss of life and limb or the inoculation of any contagious disease, how quickly action for redress would have been

taken through the civil or criminal courts.[22] None such to my knowledge ever followed."

And this is only one man's experience. Even if it is phenomenal to the extent of fifty per cent. there is an ample margin in favor of the comparative innocuousness of vaccination. Of course, like Dr. Scherck, Dr. Priest, as well as Jenner, may be "lying"; but Dr. Priest and Dr. Scherck are alive to defend themselves against calumny, whereas Jenner is safely dead.

Syphilis, consumption and loss of eyesight and hearing are common results of vaccination.

(*a*) The probable truth as to the "commonness" of these conditions resulting from vaccination may be gauged from what has been stated above. Syphilis has undoubtedly been conveyed in a few instances by vaccination during the arm to arm practice. If it has ever been conveyed since the general use of calf lymph—and we have never heard of such a case being even alleged—it can have been only by culpable negligence on the part of the operator—for cattle are insusceptible to syphilis—transmitting it through the use of specifically contaminated instruments, dressings, or fingers, or by postoperative infection. In like manner it could be conveyed by any operation, even incising a felon. Syphilis has even been conveyed by using a towel which another person had used. Are we therefore to discard the

[22]On January 12, 1907, Mrs. George Berry sued the city of Oregon, Ill., to recover the value of her personal property destroyed by the city after her recovery from smallpox, as a necessary sanitary precaution to prevent the spread of the disease.

use of towels? Personally, we never do, from choice, use a general towel if it can be avoided, but there are times when all of us are compelled to do so or to dry *au naturel;* yet I fancy few of us worry over the danger of syphilis in consequence. (Of course, if the child is the subject of latent inherited syphilis, vaccination, like other operative measures might possibly arouse it into activity).

(*b*) As to consumption, by which we suppose tuberculosis, and especially pulmonary tuberculosis, is meant; inasmuch as personal knowledge, literary research, and general inquiry has failed to bring to light a single allegation by competent observers of the transmission of tuberculosis by vaccination, though medical practitioners have recorded many other ailments as having been occasionally produced by, or at least attributed to, vaccination, we do not consider that this assertion calls for further comment; more particularly as vaccination is now performed entirely with bovine lymph manufactured in laboratories in which the utmost care is necessarily taken to exclude tuberculous cattle as the source. By no means the same amount of care is exercised by dairies as will be evidenced by the following abstract from a bulletin of the Bureau of Animal Industry, issued on January 12th, by Dr. E. Schroeder and Dr. W. E. Cotton, of the bureau:

"Man is constantly exposed to fresh tuberculous material in a helpless way through his use of dairy products from tuberculous cows and cows associated with tuberculous cattle.

"While many cases of tuberculosis undoubtedly have their origin through food directly or indirectly infected with fresh tuberculous material by tuberculosis poison, there is no means to-day by which persons are brought into closer contact with fresh tuberculous material than milk and dairy products obtained from and in the environment of tuberculous cows."

Any one who has ever inspected any of the various laboratories for the production of vaccine must have been struck with the great care exercised in the selection of the animals employed, particularly with reference to tuberculosis; while anyone, on the other hand, who has investigated many dairies, must have been equally struck with the extremely insanitary condition of many if not most of them, and with the little care usually exercised, save in a few honorable instances, to exclude tuberculosis and other diseases.

It is therefore abundantly clear that the use of milk is an infinitely more probable source of tuberculosis than vaccination, or indeed than all likely modes of inoculation put together. Wherefore the abolition of milk as a food seems, on Mr. Hubbard's line of argument, to be far more imperatively called for than the abolition of vaccination.

(*c*) Loss of neither eyesight nor hearing, again, can occur as a *constitutional* result of vaccination; the former only by direct inoculation into the eye. We have heard of a case where a physician lost his eye by a fragment of a vaccine tube flying into it, and inoculating the eye. Rubbing the eyes with fingers contaminated by the sore might possibly inoculate

them. But drinking out of the public cup in a railway car might inoculate, and doubtless has inoculated, persons with syphilis. Although it is a risk that is unnecessary, and therefore to be avoided, we venture to state that notwithstanding the millions of people who drink out of such cups very, very few physicians have personal cognizance of such a case.

But as a matter of fact none of such accidents of vaccination are to be attributed to vaccination *per se*. All must arise from one of three *preventible* sources: (1) improper material; (2) negligent operating; (3) self infection after the operation.

(1) As to improper material, a provision merchant may sell us ptomaine-containing food, or a dairyman typhoid-contaminated milk. Are we then to forswear eating? A druggist may dispense strychnine for quinine, oxalic acid for Epsom salts, or arsenic for bismuth (all of which have happened). Are we then to forswear taking any medicine under any circumstances? A dry goods merchant may sell us stockings dyed with poisonous tin salts (serious skin diseases have resulted from this cause). Are we then to forswear stockings? A tailor may send our new suit out to sweatshop labor for making up, and so infect us—even with smallpox. Are we then to forswear clothes?

(2) As to negligent operating, a surgeon may bungle an operation; a navigating officer may run our ship aground and cause us to be

drowned; a railroad engineer may kill us in a wreck; a car or an automobile may kill us as we cross the street; a theatre, a lecture hall, or even a church may be burned and burn us up with it, and so forth, and so on. Are we therefore to forswear surgical operations, seagoing, railroad travelling, crossing the street, and to keep away from all places of public resort (even though Mr. Hubbard should be announced to lecture)? Yet all these accidents have proved infinitely more disastrous than the accidents consequent on vaccination.

(3) Finally, as to self infection after operation. This may follow after any trivial, wound. More people die and many times more are seriously injured in the United States from Fourth of July celebrations on a yearly average of twenty years than can be shown to have died or been seriously injured by vaccination during the entire twenty years, in the civilized world. This, we are aware, is an assertion, not evidence; but since Mr. Hubbard has made wholesale assertions about the general evil results of vaccination, it is "up to him" to present the figures. We have no shadow of doubt, however, that our assertion could be amply substantiated with a good margin in our favor.

In a few, a very few, instances, terrible consequences have followed on vaccination, but in no case were they any more unpreventible than the railroad accidents, the fires, the industrial and street accidents, etc., that kill their

thousands[23] for every individual injured as a result of being vaccinated—not as an essential result of vaccination *per se,* for there is no such thing at all.

Mr. Hubbard's next paragraph is irrelevant and contains merely a diatribe against "the doctors." Let it pass.

[23]"It has been the excuse of railroad apologists that the increase in accidents has been due largely to the increase in travel, but this is not the truth: for while one passenger was killed in 1895 for every three million carried, now one is killed for every one million four hundred thousand. It is still worse in injuries, for while one was hurt for every two hundred thousand carried in 1895, now one is hurt for every seventy thousand. As we must remember that this seventy thousand represents many duplicates—that is riders repeating trips—the percentage grows uncomfortably large. The chances of fatal accident have increased sixty-one per cent. in ten years, while non-fatal accidents have more than doubled.

"Taking the broader field of industrial accidents, the same condition is found to exist, although the data is (sic) hard to collect because only one State, Wisconsin, requires physicians to report every accident which confines a patient for a fortnight. Dr. Josiah Strong, in a recent issue of the North American Review compares these losses with those of war, and he finds some startlingly picturesque results; thus civilization has grown more dangerous to life than the perils of savage beasts and savage men. Dr. Strong estimates that there are in the United States over five hundred thousand accidents a year, more than two great armies can inflict on each other during the same period. There are more casualties on our railroads alone in one year than were killed on both sides in the Boer war in three years. The total casualties yearly in all trades undoubtedly are fifty per cent. more than all the killed and wounded in the late war between Japan and Russia."—Editorial Article, Medical Times, January, 1907, p. 19.

Mr. Hubbard now drops the argumentative and adopts the style of the newspaper reporter with a "fine story." He says:

A most excellent doctor told me last week that a few years ago he vaccinated a beautiful little girl three years old. She was the very picture of happiness and health, and as he rolled up the sleeve of her little dress, preparatory to scarifying her arm, she looked at him trustingly out of her bright blue eyes and smiled.

The doctor turned away and a something seemed to clutch at his heart.

"Hurry up, doctor, I can't keep her quiet much longer," said the mother nervously.

"I am not going to vaccinate that child, unless—unless you demand that I shall," said the doctor.

"Well, vaccinate her—that is why I brought her here."

The doctor performed the operation. The child cried a little as children do, but soon forgot her hurt, and laughed out of her bright blue eyes as her mother led her away.

In six days the doctor was sent for. He found the little girl with a violent fever, her arm swollen to an enormous size, and in great pain.

A week later the fever subsided, but the whole arm was covered with sores, and her eyes were so affected that she had to be kept in a dark room.

Two years have passed; the child's body is covered with an eruption that comes and goes. She has scarcely grown an inch in height and her weight is not as much as on that fateful morning when she looked innocently into the face of the doctor and laughed in glee.

"I often drive around the block to keep from running the risk of seeing her. She is the last person I vaccinated, and the last person I will ever vaccinate," said the doctor.

"What will become of the little girl?" I asked, "Will she outgrow the poison in her system?"

"I know what the end will be," said the doctor, "She will die of tuberculosis when she is sixteen—provided, of course, that she lives that long."

Making all allowance for reporter's hyper-

bole, the main facts in this case may be correct. But even so, they prove nothing against vaccination, though they do suggest a good deal as to the competency of this doctor who has Mr. Hubbard's testimonial that he is a "most excellent" one.

The doctor must have been (1) a thorough antivaccinationist; (2) a half-hearted antivaccinationist; (3) an indifferentist; or (4) a believer in vaccination. There is no other possibility. He was presumably at the time referred to not a thorough antivaccinationist, or he would, in all likelihood, have refused to vaccinate, giving a certificate of insusceptibility or finding one of the many ways of evading the law[24]. If he was an indifferentist or a vaccinationist, he would not have demurred to vaccinating the child unless he had seen indications of some condition—notwithstanding Mr. Hubbard's assertion that the child "was the very picture of happiness and health"—that would have led any competent physician to decide that this was a case in which vaccination should have

[24]We quote here a letter received recently by a certain health authority from a registered physician concerning the non-vaccination of a public school principal:

"To whom it concernn—
Principle ——— ——— was vaccinated by me and the Vaccination did not bloom, shows their is no poison, or small pox virus in her system for it to bloom, and it is not advisable to vaccinate at present, as it will not effect, its purposes.
"Yours truly
"Dr. ——— ———"

been deferred—for there are such cases. If under such circumstances he yielded to the importunities of an "unthinking, unscientific" mother, he was guilty of criminal negligence.

He was, therefore, probably a half-hearted antivaccinationist; and such a man is scarcely calculated to be of the mental calibre that one could rely on to be scrupulously careful as to methods, technically skillful in his art, positive in his directions, and intelligently watchful over his case. (A thoroughgoing antivaccinationist might be all these, because he would be a positive man and not a nincompoop). It is morally certain from Mr. Hubbard's description, that either this "most excellent doctor" through surgically dirty methods infected the child with a streptococcic or other pusproducing infection—which is more than possible, it is intensely likely, arguing on general grounds—or that the child infected herself, or possibly both. One thing is sure. It was *not* vaccine lymph that caused the results as stated, but streptococcus or other pusproducing infection.

Again, the child was, at the time of writing, five years old—for she was three when vaccinated, and two years had elapsed since then. And that "most excellent doctor" had the assurance to state that she would die of tuberculosis in eleven years time, if not before! Why? If the child had at five years of age developed tuberculosis—which is a specific complaint and due solely to the germination in a susceptible subject of a specific microor-

ganism—so markedly as we are led to suppose from this prognostication, there is no occasion to wait anything like eleven years for the result. She will either fortunately have shown herself one of Nature's beneficiaries and have become cured of her ailment, in which case a change of physicians will not unlikely have been a contributing factor, or she will be dead, some time before eleven years shall have passed.

But in any event that physician, in the case in point, was either justified by the child's condition in vaccinating, or he was not. If he was, his only relief from a charge of gross malpractice on his own part consisted in an investigation of the lymph emanating from the same source of supply and in the establishment of its contamination, thus shifting the guilt to the purveyors of the lymph (just as he would have had to do had a druggist compounded a prescription of his which called for quinine, with strychnine); if he was not justified—as notwithstanding Mr. Hubbard's poetry about pictures of health and happiness, may have been the case—then *why did he vaccinate?* Would he have done any other operation upon the child which its condition clearly did not warrant, or have prescribed for it some drug which was obviously unsuitable and probably injurious for it, on its mother's dictation?

On the whole, we do not wonder that that physician often "drives around the block to keep from running the risk of seeing her." We feel as though under similar circumstances

we should be tempted to leave the town and try to make reparation for our misdeeds by a more careful professional life elsewhere.

To bring this matter to a close. It is idle to go on refuting repetitions of statements already refuted. The remainder of the article contains only the following fresh point:

> Fully one-half of all physicians now know, in spite of text books and colleges, that vaccination is a fallacy, and moreover a dangerous fallacy, unlike black cat salve.

Unqualifiedly denied, even if the word "believe" be substituted for "know." To say that ten per cent. of the medical profession is of that opinion is to stretch the figures beyond the limits of probability.

The article concludes with a letter from Dr. Z. T. Miller, "an eminent physician of Pittsburg," which—beyond the fact that it gives a few specific instances in which harm is alleged to have resulted from vaccination which are possibly correct, for no one denies that such instances occur in an infinitesimally small proportion of cases among the millions that have been vaccinated—indicates nothing that Mr. Hubbard has not already advanced and that has not already been specifically dealt with here; save that, reversing the usual order of sermons, it seems to be the text from which Mr. Hubbard has expanded his preachment. But this cannot be, of course, because Mr. Hubbard has no respect for "information derived from lecturers and books," which includes, of course, letters and other writings,

but believes only in *knowledge*—that which one has made one's own through personal experience.

And yet either Mr. Hubbard's disquisition is not based on the knowledge of actual observation and experience, which alone, according to Mr. Hubbard, can be of any value, or judging from the historical era he has covered in his remarks, he has attained the, in these days, phenomenal age of at least 110 years of observant and reasoning life, exclusive of childhood.

Was it not Mr. Hubbard who was responsible for the aphorism "Men first learned to talk by listening to parrots"?

KENNETH W. MILLICAN.